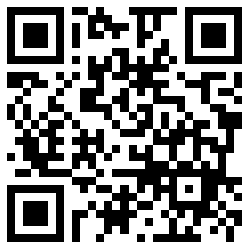

The School World

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The School World

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SOME PROBLEMS OF SECONDARY EDUCATION.

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WE have lately been reminded by Prof. Sadler that the present is a time of exceptional activity in secondary education. Since 1902, the reassumption of control by the State, as represented in the Central Government and in the Local Education Authority, has resulted in a definite mapping-out of education areas which is without parallel in our history, and in the establishment of new educational foundations, which will give to the reign of Edward VII. a distinction at least equal to that of the reigns of Edward VI. and Elizabeth. And this period of educational activity has been further distinguished by a national effort to democratise secondary education. Whether the Government regulation requiring 25 per cent. of free places in every recognised secondary school has resulted in such a wider opening of the doors as was anticipated is open to doubt. It has at least revealed the extent to which the schools had already become popularised by natural process. As a sign of the democratising tendency, however, it has its significance.

Thus, during the seven years which have now elapsed since the passing of the last Education Act, the machinery has been provided for that organisation of secondary education which was advocated as a vague ideal by Matthew Arnold half a century earlier.

This organisation of secondary education has introduced a set of entirely fresh problems. In the first place, there is the problem connected with the differentiation of the schools and the differentiation of the curricula. Formerly, secondary schools prepared, generally speaking, for the universities, or for some professional or semi-professional employment. It was not anticipated that the pupils, when they left school, might have to take their coats off. The change that has passed over secondary education makes the differentiation of schools and of curricula an urgent necessity. It has become evident that in every educational area, both of town and county, there should be at least two grades of secondary schools. There must be the first grade secondary school, where pupils remain until the age of eighteen or nineteen, and the second grade secondary school, where the ordinary leaving age is sixteen.

Moreover, the schools have now to fit their pupils for occupations which are not of a legal or clerical character, or connected only with the processes of transport and exchange, but are concerned with the more strictly technical processes of commerce. There are still some of us who, on leaving the secondary school, will continue to live a parasitical existence. But the large majority are not born for that. They are born to become members of a great commercial community, a trading and colonising people. And our lower grade secondary schools will have more and more to prepare their pupils, as the democratising tendency grows, for definite technical employments.

In the second place, there is the problem of the adequate supply of trained teachers; and, incidentally, the financial problem of making the secondary teaching profession a definite profession, and not a refuge for those who have failed in other professions, or for those whose aspirations towards other professions have been defeated.

So far as the training of teachers is concerned, I believe it is true that one learns how to teach as one learns how to play golf; that in the end, the method and style of teaching will be personal and individual. But it would be absurd on this account to doubt the importance of systematic training.

In my experience of elementary schools, I have seen some wonderful results of pure training. I have encountered men and women, the products of systematic training, who have digested the matter of their lessons, and have given previous thought to the ordering of their knowledge and to the presentation of it in an interesting and attractive form. In an elementary school, I have never yet met anyone who went before the class with either the matter or the method of his lesson unprepared; while many, with sometimes the most slender natural advantages, are really trained to appeal to the intelligence and imagina-

tion of their scholars. It is of no use to palter with the problem of the training of secondary-school teachers. We shall never obtain satisfactory results until we have in our secondary schools a national student-teacher system supported by national grants.

It is obvious that there is so much which you cannot tell a member of your own staff, even if you are paying him only £60 a year non-res. He is your colleague. On the other hand, there is so much which a man who knows his business can impart, when he is in a position to start a young student-teacher on the basis of his own acquired experience. The student-teacher system in the elementary school, with its paraphernalia of criticism and observation lessons, its records and reports, is invaluable. The heads of the schools, being themselves aware from actual experience of the value of systematic training, accept their responsibilities in regard to all those details of class-management and discipline which constitute the alphabet of the profession, with a gravity and seriousness in every way commendable. Such gravity, seriousness, and patience will be necessary in our grammar schools, if we are to reach a solution of the problem of the training of secondary-school teachers.

Thirdly, there is the problem connected with the length of the secondary-school life. The democratising of our schools has emphasised the fact that the privilege of a free secondary education carries with it, for the parent, a very definite obligation. The heresy still persists, especially in our small towns and rural districts, that the secondary school is a kind of finishing school. Public opinion has still to be educated into the general acceptance of the axiom that secondary education begins at the age of ten or eleven, and must be continued until at least the age of sixteen or seventeen; and that, accordingly, the privilege of free secondary education imposes a real obligation of self-sacrifice upon the parent.

In secondary education, history has of late years been made so rapidly that one may trace the course of its development even in one's own experience. That development has not been arbitrary or accidental. It has been the result of very definite tendencies—tendencies to which no one who has a philosophical conception of history will dare to set himself in opposition. The three problems briefly enumerated above are the outgrowth of these tendencies. For convenience of reference, we may label the one set of tendencies *psychological*, and the other set of tendencies *sociological*.

Turning first to the *psychological* tendencies, we may observe, if we study the history of education in any country, from primitive to mediæval and thence to modern times, a change which is also a development of the educational ideal. Broadly speaking, the older ideal of education was disciplinary. This ideal persisted throughout the Middle Ages, so that generally the mediæval ideal was that of education as a discipline. Then there grew gradually the ideal that education was not a discipline so much as a training of the child-mind in actual sympathy with its growth, its experience, and its environment; that education was a following of the free natural bent of the child; in brief, that education must appeal to the interests and pleasures of the child, and be in strict relation to its actual experience. These two general ideals, the one mediæval and the other modern, are in a sense still at war: education as a matter of discipline and effort; education as a matter of interest and pleasure. The actual sign of our times is the attempted reconciliation of these ideals, and the differences to be observed in our educational methods depend greatly upon the extent to which one ideal dominates the other.

Thus, broadly stated, the ideal of education as a discipline and effort survives largely, and on the whole predominates, in our public schools and universities. On the other hand, infants' schools, most of our modern elementary schools, most of our science-teaching grammar schools, especially those which follow the lead of educationists like Prof. Armstrong, are dominated by the ideal of education as a matter of interest and pleasure. Extensive corporal punishment, the system of fagging, of prefects, and of Latin and Greek verses, are all part of the ideal of education as a discipline. The man who sits down before his class with a text-book in his hand (which he has snatched up in the masters' room while slipping on his gown), and doles out to his boys disconnected questions interlarded by unmannerly expletives, is a bigoted adherent to the ideal of education as a discipline and effort; the conservation of effort on his own part being in direct ratio to the output of effort on the part of his pupils.

The one great result of the modern attempt to reconcile these two ideals, and to give each its proper place in educational method, is the demand for trained teachers. So long as you hold to the ideal of education as a discipline and effort merely on the part of the pupils (and you will find this implicit and expressed in the writing and practice of mediæval educators, even down to Rousseau), so long will the village watchman, or the destitute widow, or the superannuated shoemaker, prove an adequate teacher for your elementary pupil, and so long will your disappointed Lord Chancellor, or your university graduate who drifts into the teaching profession because he has failed to find admission into any other, prove an adequate teacher for your grammar schools. But so soon as you admit the psychological ideal, then you require as teacher someone who, either by intuition or by training, is able to get into sympathetic relation with his pupils; that is to say, in nine cases out of ten, you will require a trained teacher. And we cannot hope to secure permanently a sufficiently large body of progressively trained teachers except under two conditions.

In the first place, we must have our young aspirants begin where their elders have left off. We must put them in a state of pupilage, by means of observation lessons and criticism lessons, under the instruction of expert teachers.

We must enable them to stand upon the solid basis of accumulated experience. I do not say that they will all become successful teachers; although I have myself seen some wonderful examples of silk purses made out of very unpromising material. But I do contend that, without this special training, you are not giving a chance even to your best products. There will be a period of experiment and empiricism, during which the pupils will have to suffer; and a generation of pupils lasts only about seven years.

In addition to this need for making our teaching methods definite and scientific—a need imposed upon us not by any arbitrary considerations, but by the very spirit of the age—the teaching profession in the secondary school must be made a definite profession as in the elementary school, by making the rewards to be obtained therein, not by the few distinguished persons, but by the undistinguished many, who have to do the journey work year in and year out, commensurate with the long university training, the expenditure of money and effort, and the frequent self-sacrifice of parents and guardians, which the preliminary stages of the profession demand.

As regards the second set of tendencies, which I have labelled *sociological,* it is to be remarked that down to the time of Rousseau, and even including Rousseau, the ideal of education was aristocratic. And to-day we observe the conflict and the attempted reconciliation of the aristocratic and the democratic ideals. The aristocratic ideal has various markings. The school which takes its chief pride in the yearly output of one or two open scholars is an adherent of the aristocratic ideal. Such a school could be successfully conducted outside the conditions which I have just mentioned as being imposed upon us by the modern tendencies of education. It does not require a trained teacher to turn out an occasional open scholar. It is not difficult to produce phenomena; they occur in nature without our intervention. It is not difficult, and it does not require a body of trained teachers to produce, year by year, three or four early-ripe geniuses who may be cut off in the flower of youth, or may prove sufficiently hardy to survive and live beautiful and useful lives. It is far more difficult, and it *does* require training and an attention to scientific method, to produce annually three or four hundred intelligent and useful citizens.

Again, the school which aims at handing down from generation to generation a corpus of traditional knowledge, which has survived from the Middle Ages and earlier with insignificant accretions, is an adherent of the aristocratic ideal. The people who possess such mediæval culture form an aristocracy of knowledge in the same way as those who possess the lands and tenements of their mediæval forefathers form an aristocracy of wealth. The actual value of that knowledge and that wealth is to be measured by its usefulness to the community at large. This usefulness may be limited; in the hands of some it may be of unlimited usefulness. It depends entirely upon the individual. The individual may even be useful in spite of it all, and not on its account. The curriculum of our schools is not a traditional or semi-sacred inheritance, as it was in the Middle Ages. It is not a set of shibboleths. It is something which must be continually readjusted to the varied and actual experience of our modern society.

The sociological ideal compels us at once to preserve what is good in traditional knowledge, and, keeping our schools in living touch with the changing needs of society, to make their curriculum an epitome of the experience of the race. It compels us continually to adjust our ideals of culture. All sorts of teaching, if properly imparted, represent culture—science, theoretical and applied, the construction of engines, and manual work. It is the sociological tendency which rules and guides our ideals of the modern school curriculum—ideals which, since the time of Huxley, have grown to be accepted as educational commonplaces, ideals which enable us to import into the teaching of our schools such knowledge and such culture as are necessary for the building up of a great commercial, trading, and colonising nation. It is this tendency and this ideal which has induced us to organise our secondary education, to map out our school areas, to adjust our curricula, to train our teachers, to democratise our schools, and to burden ourselves with the solution of all those ultra-modern educational problems, the very existence of which is a symptom of the renewed life and energy of the community.

THE L.C.C. CONFERENCE ON THE TEACHING OF ENGLISH.[1]

FOLLOWING the example of a provincial education committee, the Education Department of the London County Council has begun to issue a series of reports. None too soon. The great London County Council has long had the means and the opportunity of putting into the hands of those interested in education a mass of information, linguistic, anthropometrical, psychologic, which cannot be obtained except through its agency. This, surely, is the supreme defence of bureaucratic institutions, that they can amass stores of valuable information.

The paper before us, a long document of seventy pages, is not perhaps informatory as to the practice in the schools; but every paragraph is based on information given by the various members of the conference. Dr. Boas, naturally, was the chairman, and, in addition to many well-known London teachers, the names of Prof. Gollancz, Mr. Brereton, and Miss C. L. Thomson figure in the list of those answerable for the report; while Mr. A. C. Benson, Mr. Twentyman, Mr. Winch, and others are mentioned as having given assistance. A report on English

[1] Report of a Conference on the Teaching of English in London Elementary Schools, London County Council Education Dept. 70 pp. (P. S. King and Son.) 1s.

teaching, drawn up by such a body, deserves the most careful and respectful attention.

The subjects, we learn from the preface, were to be the principles underlying the teaching of English, the text-books, the teaching of grammar, the use of stories, and the like; the qualifications of the teacher—the most important subject of all—were to be left unconsidered, the reason given being that another conference now sitting is dealing with this subject.

It will be seen at once that the conference had provided itself with interesting and thoroughly controversial matter, and we are not surprised to find that on several occasions unanimity was conspicuous by its absence.

The report is divided into twelve chapters and three appendices. The chapters deal with the time-table, training in speech, the teaching of reading, spelling, composition, and English literature. The appendices are lists, of readers, historical novels, and nursery rhymes.

It must be said at the outset that the report is written in an admirable spirit. It does not appear to be the work of iconoclasts or of dreamers. It takes things as it finds them, and, merely noting "the prevailing unrest in the sphere of elementary education," it contributes its easy, suave advice to those who sit raging in discussion round the various storm-centres. The phrasing of this last sentence comes from the report itself.

Further, it is easy to see that the report is written by those who value English as the great subject in primary-school work. Weighty sentences occur again and again, showing how deeply the present neglect and misuse of English work touches the writers.

Again, the writers of the report do not pretend that the matter is not one encircled and bethorned with difficulties. They do not show us any royal road. For these three reasons Dr. Boas and his coadjutors are to be thanked. We may give a very brief summary and then proceed to an equally brief criticism.

After an introduction, rather of the *olla podrida* manner, the report at once tackles the questions of the school time-table, and comes to the conclusion that girls want more English work than boys, and that between the ages of seven and fourteen boys should devote at least ten hours in the week out of a possible twenty-seven and a half to English subjects, these subjects being phonetics, reading, writing, spelling, grammar, composition, and literature. Phonetics may be dropped at the age of eleven; reading, which should occupy four hours in early days, may between the ages of eleven and fourteen be limited to one and a half hours; grammar may be begun at nine, and may have its allotted time increased as children grow, and composition and literature are, during the last three school years, to have as much time devoted to them as to all the rest of the English subjects put together. It is assumed that every child goes through this full course, entering the school at seven and leaving it at fourteen. The framers of the report are bound to assume this and the question of leakage is not touched upon.

The recommendation in chapters iii. and iv. deal with training in speech. They amount to the following. Good models are a necessity, the isolation of sounds must be practised, and phonic principles should be applied as soon as the child comes to school; everything should be done to hint to children that there is something fine awaiting them in literature. In regard to faults of speech, the report confines itself to special London sins; *e.g.*, the defective inversion in *r*, the change of *ng* to *n*, and the confusion of *f* and *th* (which, by the way, seems peculiar to the Russian language and to Middlesex). The insertion of non-existent *r* and the various mis-soundings of the vowels are also touched on. (The report omits to say that nine-tenths of the mistakes which it abhors are found and are unchecked in the everyday speech of large numbers of country gentlemen, army officers, and good easy people in and out of Middlesex.) Methods of eradication of these mistakes are suggested. Imitation, voice drill, action, singing, and the use of gesture are considered useful. In regard to reading, it is advised that the child should be made to use his knowledge of rhythm, rhyme, and word-music; sonorous vocalisation should be insisted on, and the *mots de valeur* (as the French prettily call them) should be watched for. Here we find admirable advice; indeed, if the framers of the report had printed p. 20 in leaded type, they would have been justified. It is needless to say that the phonic method should be universally adopted, so that migrants might find themselves at once in a familiar atmosphere.

The report has nothing very new to tell us about spelling or dictation; it objects to the old method of list-learnings and of difficult snippets. It laments the comparative disuse of the blackboard; it thinks little of newspapers and of debates for the furtherance of composition, though it looks forward to the possible printing of a London school newspaper—a brilliant suggestion. It touches, very inadequately, on the value of oral composition, and it consumes a few valuable pages on common-sense suggestions which come into the brain and practice of all teachers worthy of the name. The chapter on grammar is mildly conservative, and the final twenty pages are devoted to a thorough discussion of the teaching of literature. It recommends that the miscellaneous reader, the connected reader, and the continuous reader should all be in use; it praises, with reserve, silent reading; it can give no unanimous decision as to the wisdom of putting Shakespeare before boys of eleven; it has some admirable remarks on the annotation of books; and it ends with a series of short notes of a rather filmy character on the necessity of studying middle English writers, on the school magazine and kindred subjects. One suggestion seems to stand out. We quote it verbatim: "We therefore recommend that in schools where there are

masters and mistresses with a special gift and enthusiasm for English work, they should be relieved of part of their other duties and given additional opportunities for devoting themselves to this branch of the curriculum." These words, on p. 54, should be read in connection with words on p. 6: "For the instruction in English is seen to aim, not at the mere acquisition of a certain facility in reading, composition, and oral expression, but to be of a deeper nature, to be ethical and character-forming."

A few words of the friendliest criticism may be permitted. The conference considered the teaching of English; but surely another conference is required on the learning of English. *English is not taught, it is learnt; and all discussion from the teaching side begins from the wrong side.* If the members of this conference were asked how they got their pronunciation, their correct syntax, their power of expression, their love of literature, what would be their replies? They would answer thus: "We obtained it by heredity or by imitation of people we admired, or by our social upbringing, or by facilities for entering a library unchecked or by being let alone." We doubt if in any case they would or could recollect that they had been "taught." The truth is that appreciation of English and all that it means belongs to a caste, and that you never know when or where you are going to meet with a member of that caste; but there is no mistaking him. Like the souls in the "Vision of Er," he has the sign upon his forehead.

Again, it is not fair to print seventy pages on English teaching and never to refer to the teacher. The excuse about the second conference is not to be admitted. It is the teacher who is to blame if the child cannot write a composition; it is the teacher who is to blame if the child thinks Tennyson's "Revenge" dull and "Robinson Crusoe" slow. The child comes burning to tell his experiences, to talk, to retell stories, to do his oral composition by the yard, and he meets—the teacher. He comes full of the most exquisite and correct gesture, intonations, voice-curves, and lights and shadows, and subtle cadences; and he meets action-songs and pattern-reading, and the teacher.

Again, it is not fair to attack either dialectal idiom or dialectal pronunciation indiscriminately. No one who has listened to a racy speech in Doric would wish to substitute for it the emasculated vapidity of school English, and the same may be said of many of our dialectal words and vowel sounds. The right way to tackle this difficulty is to accept the children's speech, and let them keep it and use it in school, translating it, as we translate their nervous gesture and their beautiful tones, and turning it to our own uses. Let children be taught standard pronunciation by all means; but the pride in the virility of dialect should not be roughly treated. Besides, and this is not recognised, London teachers' English may be heard in every railway carriage and tram.

There are many other minor matters on which a critical note might be written. The uselessness of a good deal of work in phonetics; the fallacy of using the blackboard in the teaching of reading; the omission of all reference to stammering and stuttering in the schools; the omission of any bibliography: these are a few of the subjects on which the irresponsible reviewer would like to have his say. All must be passed by. There remains, however, one word of protest which must be uttered. Throughout the whole of this report, there is no reference whatever to the book from which more English and better English can be learnt than from any other—the English Bible. It may not be the business of the conference to set people right about the teaching of the Bible; but surely it is the business of an important committee of scholars, meeting in solemn conclave on the teaching of English, to lay before the schools of Great Britain some suggestions as to the use of the riches in the English Bible, and to denounce unmistakably those who, by their unseemly squabbles, keep from the English boy and girl the full appreciation of the greatest gem in their country's literature. The chief reason why the harder and more advanced subject is so difficult for children to appreciate is that the simpler stories and the sweeter music of the Saxon Bible are no longer known, read, and studied; there is no introduction to English comparable to the Bible, and no report on English can afford to ignore the subject. A statement of divergent views would have been better than this blank stare of non-recognition.

The L.C.C. has done a fine piece of work on a difficult ground. We await eagerly the report on the qualifications of the teacher. Will love for his subject—no other word is adequate—be the first qualification? If so, we shall have to hunt rather farther afield and with a more careful eye in the selection of our "teachers" of English.

THE AGE OF ADMISSION TO OUR YOUNGER UNIVERSITIES.

By An Inspector.

WHEN the University of London fixed sixteen as the age at which candidates might present themselves for matriculation, it was an examining body, and as such it did, and still does, very valuable work. Not long ago, however, a most important step was taken: the teaching university was established, and various colleges and teachers were recognised as belonging to that department of the university's work.

In the other English universities, apart from Oxford and Cambridge, which may be designated as non-local, the conditions are similar: a matriculation age of sixteen and a local teaching university.

The local university has its special advantages as compared with the older universities and its special duties. In London, Birmingham, Sheffield, and the rest, the university is the highest place of education, called upon to train the

captains of literature, science, commerce—indeed, all departments of knowledge—within its sphere of influence. It appeals to the spirit of local patriotism, and when the value of higher education receives more general appreciation, the university will be supported, as it deserves, by local munificence. This has been the case in America, where the rapid acquisition of money has not been unaccompanied by regard for the needs of the universities, and these institutions receive pecuniary support in a measure which may well fill us with envy.

If the younger universities enjoy a great advantage in securing the practical interest of the prominent men dwelling in the town and its neighbourhood, they also have special duties. It is right that they should be in close touch with the secondary schools that provide the material to which they are to give the best instruction at their disposal; and promising steps have been taken in this direction. Secondary schools may be a little restive at having to undergo inspection by the Board of Education as well as by the local university. There can, however, be little doubt that it is inspection by the latter body that is of supreme importance; for the university alone undertakes both examination and inspection.

Now it is a well-known fact that a consideration of the written work of a school is a valuable complement to what is generally understood by inspection; and there can be no doubt that, while the written work often corroborates the impressions derived from inspection, it also frequently discloses either weak or good points in the teaching which a visit to the classes had failed to bring out. The connection between the school and the university may thus become very close indeed; and the inspectors, regarded as educational advisers, become more helpful as their knowledge of the school becomes more intimate.

Assuming that the work of these advisers appointed by the university is intelligent and sympathetic, the schools cannot but be grateful for their connection with the university in this respect; and if the examinations conducted by the university encourage good methods and do not discourage educational experiments, they also are welcomed.

In connection with the University of London and the schools within its sphere of influence a difficulty has, however, arisen which is bound to arise in other local universities as well; and it is important that this difficulty should be plainly stated and, if possible, solved.

The secondary schools which prepare pupils for the universities (and the number of these is fortunately increasing) are naturally anxious to develop this side of their work. It is generally recognised that boys and girls who stay in the secondary school until they reach the age of eighteen or nineteen learn lessons of great value, quite apart from the direct instruction that is imparted. They are given positions of responsibility in the management of their school-fellows; they learn to become men and women. No one will deny that these last years at a good school are of great advantage to our boys and girls.

The university, however, fixes the age of admission at sixteen, and well-educated boys and girls experience no difficulty in matriculating at this age. The parent is satisfied with the secondary school, and would like to give his child the advantage of the continuous education and moral training that the school is willing and able to supply. He asks, not unnaturally, whether the school can prepare for further university examinations. The answer, in the case of London, is that the school can indeed prepare for the intermediate examinations; but there are two very serious drawbacks. In the first place, the time occupied in preparing for these examinations is not recognised by the teaching university; if the pupil proceeds to it after leaving school, he has to wait for his degree as long as if he had only just matriculated, and he will therefore be at a disadvantage compared with the pupil who proceeds to the university immediately after matriculating. In the second place, there is a notorious difference in standard between the external intermediate examination and the internal; it is distinctly easier to pass the internal. Here again, therefore, the pupil who decides to stay on at school is at a disadvantage. It is not surprising that the parent, weighing these considerations, should withdraw his child from the school at the age of sixteen.

Is this really a gain for the pupils—and for the university? It may well be urged that the university, with its freer life and comparative absence of restraint, especially in a town like London, presents dangers for what must be called boys and girls. But apart from the moral aspects of the question, it may well be maintained that only in exceptional cases is the mind of a boy or girl of sixteen sufficiently mature for university work. As a matter of fact, the admission of students at this early age tends, as is inevitable, to lower the standard, and suffices to explain the fact already mentioned that the internal examinations have been made easier than the external. It is no gain to the university to receive students at this age. Work of a more advanced and more thorough character could be undertaken if the age of the students were higher. It should be impossible to obtain a degree at the age of nineteen; and it would be in the best interests of the university to encourage boys and girls to stay at school until they have attained eighteen years.

This is the rule in the older universities, which certainly do not encourage boys to become undergraduates at sixteen. The average age of those admitted to study at Oxford and Cambridge is nearer nineteen; and I have not heard any regret expressed that the average undergraduate at these universities is not younger.

The difficulty that has been stated is a very serious one; and unless it be faced soon, it means a real danger for the younger universities. Instead of being regarded as the friends of the

schools, there may be an undignified "fight for the sixth form," as it has been well termed—the schools desiring to complete the secondary education of those entrusted to them, the university trying to secure that all post-matriculation work shall be carried on by its teachers.

There seems to be only one solution of the difficulty: a raising of the age of admission to the university. If it were made eighteen instead of sixteen, the difficulty would disappear. This naturally presupposes a raising of the standard of matriculation throughout the country; no one university could undertake it without running the risk of losing a number of prospective students, who would follow the line of least resistance. It would, in the case of London, also mean the raising of the age of the external matriculation examination; and this might lead to a decrease in the number of candidates, and consequently in the amount of fees received from this source. A properly endowed university would be above such considerations; it would, indeed, feel that any sacrifice was worth making that led (as this would lead) to an appreciable raising of the standard in the work done by its undergraduates. But the University of London is *not* well endowed; it is important to impress again and again the fact that it needs money above all things. Even a second-rate American university is better off than this university, which, as being in the great metropolis, should be not only the summit of education in its own sphere, extensive enough in all conscience, but for the whole Empire. In every attempt at improvement and extension the University of London is hampered by lack of funds. Until it is properly endowed, it would seem impossible to raise the age of admission, however much this step would be advantageous to its own work and that of the schools that furnish its students.

Similar conditions prevail elsewhere; and, as has been pointed out, concerted action alone will be of any avail. It is earnestly to be hoped that the younger universities will join in considering what is likely to be a question of vital importance for our country, involving as it does the development of education in our secondary schools and our universities. How can we hope to impart that knowledge and skill which the struggle for life and the competition of nations now demand from those who would succeed, if we take two years from the school life and lower by two years the age of our university students, unlike any other great nation?

Elementary Reader of French History. Edited by F. M. Josselyn and L. R. Talbot. v+73 pp. (Ginn.) 1s. 6d.—The whole of French history has here been compressed into forty small pages. It is chockful of facts, and consequently makes rather dull reading. Maps have been added, but the names on them are in their English form (*e.g.*, Corsica, Black Sea, Brittany). There are also notes and a vocabulary. The book (according to the preface) "has been prepared with a view to its early adoption in class-work, especially for sight-reading." We cannot recommend its early adoption.

THE FOUR CHIEF PROBLEMS IN MODERN LANGUAGE TEACHING.

By CLOUDESLEY BRERETON, M.A., L.-ès-L.

THE four main problems in modern language teaching to-day are the utility or not of phonetics, the use and abuse of translation, the teaching of grammar, and the teaching of literature.

On the first point, I must confess, my mind is more or less made up on the value of phonetics, although my opinion is so elastic I fear it will hardly please the enthusiast on the subject. Its value, however, to the teacher himself must appear wellnigh incontestable, once he realises that phonetics is really a form of voice gymnastics, a system whereby he may keep his accent in training in the same way as he keeps his voice in tune by running over the notes of the scale. If one's accent did not insensibly deteriorate, there might be some reason why the teacher should not practise phonetics. But the truth is, everyone's accent does deteriorate, even that of the foreign teacher who has been born and bred in France.

A year or two back I had two very striking examples of the fact. A French friend of mine, with a high university degree, who had spent some fourteen years as a master in one of our big public schools, though he had passed most of his holidays in his own country, was lecturing one day in a French school. After the lecture, the pupils said to a mutual acquaintance: "How well he speaks French!" They had, of course, taken him for an Englishman. Some little time later we had a visit in London from the University of Paris, and I found myself seated next a well-known French teacher, who had on his further side one of the Sorbonne professors. The latter said to him, "You are English, are you not?" which the former promptly denied. The Sorbonne professor, however, returned to the charge and said, "But you must be"; and when the other, with more justification than Peter and with equal emphasis, repudiated the accusation of being a foreigner, his compatriot rejoined: "Vous avez quand même un fort accent." To complete the parallel, I may add I am afraid I rather crowed. But the real moral is that if such things can befall the freeborn, we who have at a great price obtained some freedom in the language must leave no stone unturned to preserve it. Hence the necessity of a knowledge of phonetics, so far as the teacher is concerned, appears to me incontestable.

As regards the use of the phonetic script in class, I think some use of the symbols is of considerable value, but I must admit I have seen excellent work done with no phonetics at all. If the teacher can do without these adventitious aids, I do not know why he should not be allowed to do so. But I always make it a practice of suggesting to him that, excellent as his work is, it may be worth his while to look into the matter, not in the way of books, but in actual lessons

given in a colleague's class, in order to see if he may not be able to use them himself as a labour-saving device. Personally I am in favour for these reasons of using a phonetic chart in the class, even if the text-book is not in the phonetic script. The unfamiliar symbols are so few they are easily mastered, and two or three minutes' drill at the outset of each lesson tunes up the accent alike of teacher and taught. Moreover, it is a great benefit to have the chart hanging up as a reference, or *point de repère,* in case any sound is mispronounced. The pupil may then and there be referred to the correct sound he has learnt on the chart, and thus enabled to correct his own mispronunciation.

On the question of the early use of translation in class, I am afraid I may appear to the straiter followers of the new method, if not a heretic, yet at least a harbourer of heretics. But I cannot refuse the evidence of my own eyes, and I have seen work in classes in which translation was practised in the second and third years as good as work in classes where it was not practised at all. But I must add immediately that in all these cases the translation lesson was largely utilised for basing conversation on the text. If then the pupil has to a certain extent been allowed to lapse into English, he has also been made to re-transport himself into French, while acquiring in the process large portions of the foreign medium. In some of these cases the translation into English has been utilised for retranslation into French, especially in the matter of written work, and this is certainly one of the ways in which the difficult art of translation into the foreign language may be introduced. To put my belief in a nutshell, in the earlier stages, not the earliest, I think translation is permissible if the teacher's chief aim is vocabulary. At a later stage I think it is not only permissible, but, within limits, desirable.

There are, in fact, two main periods in learning a language. The aim during the first period should be to form a compact *noyau* of ideas and phrases, to get, in fact, a good grip of the foreign language. The second period begins when this ideal has been reasonably realised, and the pupil is thus in position to compare the foreign language with his own or other languages already acquired. If the saying be true, "What do they know of France who only France know," then one may say, "What do they know of French or English who only French or English know?" Each language gains in precision of expression from being made a point of comparison with the other. The main point is that the time devoted to such work must be kept within bounds; that is to say that French must always remain, as before, the *predominant* element in the French lesson. If such safeguards are taken, I think the loss occasioned by breaking the French connection is more than compensated for by the additional precision of thought and expression produced by a certain amount of translation into English and of retranslation into French, and lastly of translation direct into French. The last-named, I am convinced, should come latest of the three processes, and I fully agree it should be preceded by free composition and retranslation, in order to counteract the influence of English idioms and enable the pupil to re-think the English in a French form.

I would only add that it seems extremely likely that in the French schools in which the New Reform, phonetics excepted, has won its most sweeping victories, translation into the mother tongue will shortly be re-established for the first part of the *baccalauréat,* now taken at the age of sixteen, and even fifteen.

To come to the question of the teaching of grammar. The opening stages in the matter have been well worked out by the composers of various popular text-books in use, but in the intermediate stages we have still largely to rely on the experiences of individual teachers, as the interesting papers at the last meeting of the Modern Language Association show. It is, however, necessary, I think, to insist that one or two very important if apparently simple practices that pertain to the earlier stage need to be carried on in the second.

One is the essential necessity of getting the pupils *on all* occasions to do as much as possible themselves. Take a very simple instance. To learn the tenses at the outset, a boy may be brought before the class and made to say, "Je suis anglais." The others point to him and say, "Tu es anglais." The pupils point to the boy and say to the teacher, "Il est anglais." Pointing to themselves they say, "Nous sommes anglais." The boy in front of the class points to the class and says, "Vous êtes anglais," or looking at the teacher he says, "Ils sont anglais." Now this sort of thing is the A B C of the art; but my point is that it can be, and should be, varied *ad infinitum.* A boy and his neighbour can practise in this way the interrogative and negative forms, or the class can be divided like a choir into two sides for the purpose. What is still more important, the intricate use of the pronouns with the imperative can be hammered in in a similar fashion. This, I am convinced, is the one effective way of learning these common usages that come so difficult to the English pupil. Some persons find such practices difficult with older classes on account of the shyness that pupils develop at a certain age. I am confident that this should not be a real difficulty, provided that recitation is made a feature in every class, and the pupils throughout the school, and especially in the higher forms, are encouraged to act short scenes and plays in French before their fellows. The whole gist of the matter lies in the establishment of the right kind of tradition.

My second point is that the blackboard should be used on all possible occasions, and as often as possible the scribe should be a pupil and not the teacher.

My third point is that the class should be called upon whenever possible to do the correction.

This last suggestion sounds very simple, but it is the most effective way of securing collective attention. The mere fact that Brown minor may at any moment be called upon to correct Jones minimus, or at least repeat your question, keeps him on the *qui vive* throughout the lesson, while the brighter pupils are far less likely to become listless if the correction of the duller is left whenever possible to them.

But when the common grammatical notions have been mastered, I think it highly unwise not to short-circuit the process by completing and codifying in the old-fashioned way of learning by heart the fragmentary knowledge thus acquired. Hence I am a firm believer in a short grammar in French for boys who have gone through the preliminary reader, not merely as a book of reference, but also as a means of rounding off and cataloguing the knowledge already acquired. Get the principles, whether of accidence or syntax, into the boy's head, and then the printed page, which gives the results in a convenient form of tabulation, should prove a valuable aid to memory, especially in the case of those whose memory is rather visual than auditive. A certain amount of transcription and writing out is also valuable from the point of view of the *muscular* memory—a factor so largely ignored by most advocates of oral methods. I mention this because only a few years ago I read a very interesting article on English dictation by one of our leading authorities on education in which there was not a single word about the muscular memory, though Binet and others have shown how, in certain pathological cases, the muscular memory is capable of miracles, such as the writing out in full in the dark by hypnotic patients of whole pages of matter, in which, no doubt, the visual memory has a share, but the most important *rôle* is played by the *muscular* memory.

But I must hurry on to the teaching of literature. Five years ago I pointed out, in *Modern Language Teaching*, the need for considering this further stage in the subject, and the comparative neglect it had met with for easily comprehensible reasons from modern language reformers. Thus in Jesperson's admirable little book, "How to Teach a Foreign Language," 178 pages are devoted to what I would call the first or linguistic stage, and only about 14 to the second or literary. Now that the methods for the first stage have been more or less worked out, the time has come to tackle the problems connected with the second stage, which may roughly be considered to begin with pupils of fifteen and over. I think in any case we should begin with modern literature. I find my own appreciation of Corneille and Racine dates from the day when I had a firm grasp of modern French. On the other hand, I fully believe these difficult writers can be made a joy and delight to pupils who have previously read some good French literature, provided that they are taught by teachers who, during their residence abroad, have absorbed something of French literary culture, and have learnt that a literary work is a work of art as much as a picture or a piece of sculpture, and that the French word "composition" does not merely mean, like the English word, producing in a foreign medium a likeness in mosaic of some English original, but sums up the whole craft of the literary artist in such matters as plot, structure, balance, harmony, and the difficult art of saying fine things simply. What is really wanted is a certain number of suggested *graduated* courses in literature leading up to Corneille and Racine. Molière, of course, would come earlier. If the eighteenth century were selected as the ultimate objective, while taking care at the same time to read for rapid purposes or otherwise some modern literature of not too difficult a type, I think the necessary atmosphere might be created.

And lastly I still possess the hope that with still more advanced students something in the way of the study of French literary criticism (the first in Europe), or even French philosophy, may be attempted in the school or at least in the university, so that the literary spirit already engendered may not be crushed out or blighted when the necessary study of philology comes along, but may continue to flourish side by side with it to the mutual advantage of both branches. But if, as too many of our universities seem to think, the supreme value of French and German is held to be the study of philology, I still hope that, so far as French is concerned, the comparative positions assigned to philology and literature may shortly be reversed, and that we may end by copying the French themselves in considering that the main prize in studying French is not the acquisition of erudition but of culture.

SCHOOL SCIENTIFIC SOCIETIES.

By T. C. MARTIN,
Lower School of John Lyon, Harrow.

IN many of the large public schools, societies have existed for some time for the study of natural history and other scientific subjects. They are very valuable in training the powers of observation and in helping boys to express their opinions in debate; they also tend to keep together members of large schools, especially in the case of day schools. Again, in one society, by making the election of members follow municipal lines, the training of the boy for the civic life which he may take up afterwards is helped.

In all cases the societies were formed with the praiseworthy idea of encouraging boys to read papers on topics in which they had an interest, and by means of discussions following the readings to bring out or create their powers of criticism. How far these ideas have been carried out may be seen from the various reports published by many of the older societies. Success is largely dependent on the personality of the master in charge, a fact most strikingly brought out by a short account of the life of the

Natural History Society of Winchester College which appears in its last report.

Where the original idea has not been kept to strictly a series of lectures given by outside friends of the school has been the result, and from the information which has been kindly given to the writer by the organisers of these societies in the large schools about the country, it appears harmful to allow even one or two lectures by people not connected with the school to be given during a session; the main object is to get boys to give papers and to do all the necessary work in connection with the society, and this should be kept to the fore.

Membership is usually restricted to the upper forms of the school, and occasionally old boys are invited to join. It is desirable that only a limited number of the latter should be eligible, as there is a possibility of the younger members feeling diffident about giving their own opinion in front of their elders.

Some schools run a general club, to which various societies are affiliated, one subscription covering admission to all. This seems to be the ideal arrangement, but in the majority of cases the societies seem to flourish best when allowed to go their own way. Of course, where there is a number of societies, times of meetings must be arranged to avoid clashing, also the number of members must be regulated.

Meetings at which papers are read are usually held fortnightly or monthly. The choice of subjects is best left to the boys, as in many cases it results in a very interesting paper on a hobby about which the reader knows a great deal. Field work and excursions to places of scientific interest are arranged during the year, care being taken that they do not clash with the organised games. As one might expect, natural history is the favourite subject chosen. Societies which have a large membership are generally divided into sections, each section undertaking the study of one branch of the subject, and holding its own sectional meetings for the purpose of discussing observations and for the furtherance of the work. With small societies it is found best to allow each member to follow his own bent as far as practicable, and to hold meetings of the whole society at which papers are read dealing with the various branches in turn. The two methods are of equal value as regards the prime object of the society, but naturally a greater advance is made in any one subject when taken up by one section; this latter method should in theory tend to produce botanists, entomologists, and so forth, far more than where the work is not specialised.

Ideas of the lines upon which successful societies are carried on may be gathered from a brief account of those in existence at a few of the large public schools. At Marlborough College a very full record is kept of all observations made during the year. All "captures" are carefully identified, and the dates upon which they were discovered are compared with those of former years. The study of the flowers, birds, and insects of the district forms separate sections; whilst a very strong astronomical section holds two or three meetings a month, at which papers bearing upon topics such as "The Sun," "Moon," "Comets," "The Herschels," are read. This section possesses a telescope which, according to the report, will be available for observations in the future. The keeping of astronomical observations does not seem to commend itself to school societies in general.

In connection with all natural history observations, a photographic section is of great service. To collect a series of photographs illustrating the habits of some animal or plant necessitates a special kind of camera, yet it is comparatively inexpensive, and the results, consisting of a permanent record of trustworthy witnesses, well repay the initial expense.

In the Marlborough College report appear some excellent reproductions of photographs of the heavy fall of snow of Easter, 1908, also of the nests of the sedge and garden warblers.

As an example of a society which is not run in sections, that of Winchester College may be taken. The members find that it has been far more successful since sectional meetings were dropped. The lantern is used largely in illustrating the papers read. The slides for most of the lectures were prepared by drawing on glass with vitro ink, and from the report of the society it appears that, by the simple method of diluting the ink with water and using a brush, the slide could be made quickly and with beautiful results. The hektograph reproductions in the report give some idea of the excellence of these slides. Here, as in many of the schools, meteorological records are kept. The real value of keeping such records, beyond serving as useful exercises in plotting, does not seem to be brought out in the majority of cases. The only method probably by which such records can be made instructive is for one or two members at the end of a year to collect and correlate as far as possible all the meteorological observations; the summary made in this way would provide illustrations of the general laws governing weather phenomena so far as they are known.

The same remarks apply to the keeping of anthropometrical measurements. At Marlborough a very thorough series of measurements is made, and the Harrow Scientific Society is contemplating doing the same thing.

All such records will doubtless be of great value to men taking up anthropometry seriously, and thus the mechanical task of obtaining these measurements might be relegated to the various societies scattered over the country. There is no value in simply keeping records.

The possession of a museum is an absolute necessity for a natural history society. It need not be complete in any respect, but it should be allowed rather to grow slowly. As new speci-

mens are obtained they can be put into the cases with others of similar characters; as each group grows a study of similarities will bring out subdivisions, and then the task of a more detailed classification may be undertaken. During each year specimens should be replaced by better ones whenever possible. By not allowing the museum to grow too rapidly, and by frequent discussions on the contents already obtained, the young naturalists may be prevented from becoming mere collectors, a danger which is always imminent. The value of a school museum lies in the building of it. It should contain types and not rarities: the latter may be kept with profit in university and municipal museums.

The institution of prizes for best essays, sets of notes, and for well-arranged collections of plants produces very good results. The best of the papers are usually printed in the society's report and form very interesting reading. Although natural history societies are more popular than others, yet there are many which exist under the names of physical, chemical, and scientific societies.

Carefully prepared papers on some topic of general interest are read by members, followed by a discussion. The latter for the first one or two meetings usually consists of "questions and answers," but after a time one or two members other than the reader of the paper can be induced to read up the subject. It is a good thing to depart from the usual custom of the reply to all questions asked being reserved to the end of the meeting, and to allow a question to be answered by the lecturer immediately after it has been put. Also by introducing during the session a few controversial subjects, such as "Priestley's Phlogiston Theory," "The Kinetic Theory of Gases," or even "Theories of Electricity," the debating side of the society is encouraged.

Lantern slides upon nearly all scientific topics can be obtained on hire, and when special slides are wanted the "school photographer" will always be willing to make them. For diagrams and maps one cannot do better than use vitro ink or ordinary hektograph ink. Since the latter can be obtained in various colours it is possible to colour the slides by diluting the ink with methylated spirits, or even water, and applying with a brush.

Much enthusiasm is aroused by allowing apparatus for the experimental illustration of the topic, to be made in the laboratories beforehand.

In connection with these societies visits are generally made to factories and museums. A three years' cycle of visits can easily be arranged, and is about long enough to avoid members visiting the same place twice. The local gas and electric light works, also water works, afford cheap and convenient visits, whilst schools near or in large towns are usually well off as regards interesting industries. A few places available for visits around London may be given. At East Greenwich the South London Gas Works Company runs a sulphuric acid plant to utilise the spent iron oxide. The place is a little out of the way, but well repays the trouble of getting there. The manager is keenly interested in boys, and takes great care to explain everything thoroughly.

The paper factory at Croxley, Watford, gave another instructive afternoon. Other visits can be made to Robertson's electric light works at Hammersmith, whilst a mineral water factory seems to appeal to the majority of boys during the summer months.

In all cases where the processes are a little complicated it is advisable to hold an informal meeting of all those who intend to go, at which the outlines of the method are given; then when at the works the boys are better able to follow the explanations given, as very often the men in charge, although thoroughly conversant with their subject, do not keep to the front the main points of the processes, being rather apt to overload their explanations with detail. Before a visit is made to some one manufacture it is customary to assign to a member the task of reading a paper on the visit at the following meeting. He will then probably make it his business to collect samples of the raw and finished article, and to take photographs if allowed. At the reading of the paper the manager of the works is generally pleased to attend and to give further information on points which have not been dealt with satisfactorily.

A departure from the ordinary run of papers is being made this year at Harrow by the Lower School of John Lyon Scientific Society. One or two members are doing experimental work which to them is of the nature of research. As an example one boy is making an analysis of some soil, and then by experiments with plant cultures he will arrive at the necessary constituents of plant food. Another boy is experimenting on the photographic and other effects of uranium oxide. The accounts of their work should prove interesting reading at the meetings, since they will be expected to compare the results with those obtained by well-known men of science, and to give explanations of any differences where they occur.

Most large and flourishing societies manage to publish a report either yearly or at irregular intervals of about three years. Smaller societies cannot generally afford this luxury; all papers read at meetings should be kept, however, and bound up year by year, to be placed in the school library or museum. It is usual to publish one or two papers in the school magazine. As a finish to each session's work an exhibition or conversazione is given by the society in many instances. With the editors' permission I may be allowed to give information regarding the arrangements of such exhibition at another time.

In conclusion, I wish to express my thanks to the many science masters and secretaries who kindly placed at my disposal much valuable information.

TYPICAL EXAMPLES IN GRAPHICAL CONSTRUCTIONS.

By G. C. TURNER, B.Sc.
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I.

GEOMETRY, one of the oldest and in its development one of the youngest of the sciences, has always been regarded as affording, in a pre-eminent degree, a sound logical training; owing, however, to the Euclidean bonds in which it was long confined, its usefulness has suffered unmerited eclipse. The eye is a powerful auxiliary to the reason, and geometry appeals much more forcibly to the mind than the most brilliant argument clothed in mathematical symbols. It seems, on one hand, a great pity that geometrical constructions should be superseded *entirely* by the mere plotting of points from calculations; and on the other hand it seems a still greater pity that algebraical and other equations should *always* be preferred to simple geometrical constructions.

It is proposed in this and a succeeding article to give a few graphical constructions in connection with graphs and problems in mensuration and statics. Considerations of space forbid anything elaborate in the way of leading up to the various problems discussed.

GRAPHICAL MENSURATION.

The usual way of giving the area of any figure is by stating the number of squares, having sides of unit length, that it contains. This number is clearly the number of unit lengths in the altitude of a rectangle, the base of which is unit length and the area of which is that of the figure under consideration. If this altitude can be constructed, we can, by measuring its length, determine the area of the figure.

Since the area of any triangle is $\frac{1}{2}$ *base* × *altitude*, the area of any figure can be found, if a triangle of equal area can be constructed having its base or its altitude twice the unit of length. This process of finding the rectangle or triangle is called *reducing the given area to unit base.*

To find graphically the area of the triangle ABC. (One only out of several known methods is given.)

Set off along one side BC, say, BD equal to twice the unit of length. Put a set-square edge along AD and move it parallel to itself until it passes through C; mark the point E where the edge cuts AB.

Measure the perpendicular EF from E on BC; it gives the area in square units.

If the triangle ABC be transferred to drawing-paper and BD be made two inches long, it will be found that EF = 1·58″ and that the area is 1·58 sq. in.

The result may, of course, be tested by measuring the base and altitude of ABC and calculating half their product.

The proof is easily seen if the line ED be drawn.

Since EC and AD are parallel, then (as areas)

$$\Delta DEC = \Delta AEC$$
$$\Delta BAC = \Delta BEC + \Delta AEC$$
and $\therefore$ $$\Delta BAC = \Delta DEB$$

The Δ DEB has its base twice the unit of

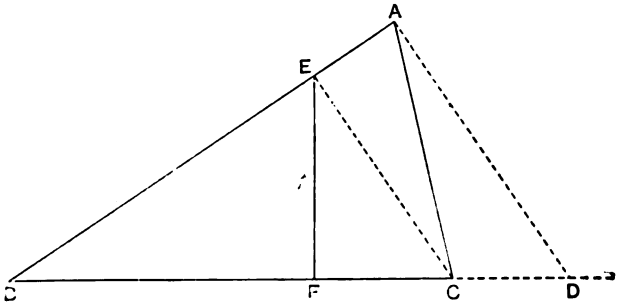

FIG. 1.

length, and therefore the area of BAC is measured by EF, the altitude of DEB.

To find the area of any rectilineal figure.

The area of any such figure is found by first finding a triangle of equal area and then reducing that triangle to unit base. Imagine BCAE (Fig. 1) to be four consecutive vertices of such a figure; the rest of the figure can be supplied by the reader. The process for finding a triangle of equal area and having its base on BC is as follows.

Put the edge of a set-square along CE, *i.e.*, on the line adjoining C to the next but one vertex; then move the set-square, parallel to itself, to the omitted vertex A, and mark D on BC where AD parallel to CE cuts it. A figure . . . BDE is thus obtained equal in area to the given figure . . . BCAE, but having one side less. Continue this process by putting the set-square along the line joining D to the next but one vertex and bringing down E to BC by a parallel. Ultimately a triangle is found equal in area to the given figure. The area of this is determined by the preceding method.

Should the area be many square inches it would be better to take the base of our final triangle, 4, 6, 8 . . . inches, when the altitude, multiplied by 2, 3, 4 . . . would give the area in square inches.

If the given figure is a plan drawn to the scale of, say, $\frac{1}{8}$″ to 1′, it would be best, since $\frac{1}{4}$″ is rather small for the base of a triangle, to find a triangle of equal area and base 2″, when eight times the altitude would give the area in square feet.

To find the area of a segment, ACB, *of a circle of radius* 4·5″ *and central angle* 120°.

[The fact that the area of a circular sector = $\frac{1}{2}$ radius × arc is supposed known.]

At A draw a line perpendicular to AO, where O is the centre of the arc.

With dividers adjusted so that the *arc* BE is barely distinguishable from the *chord*, start at B, and, by alternate clock and contra-clockwise turnings, step along BCA; prick the point where the last sweep cuts the tangent AB_1, near A. From this as starting-point, go by successive contrary sweeps along AB_1 as many steps as were made along BCA. If B_1 is the last point,

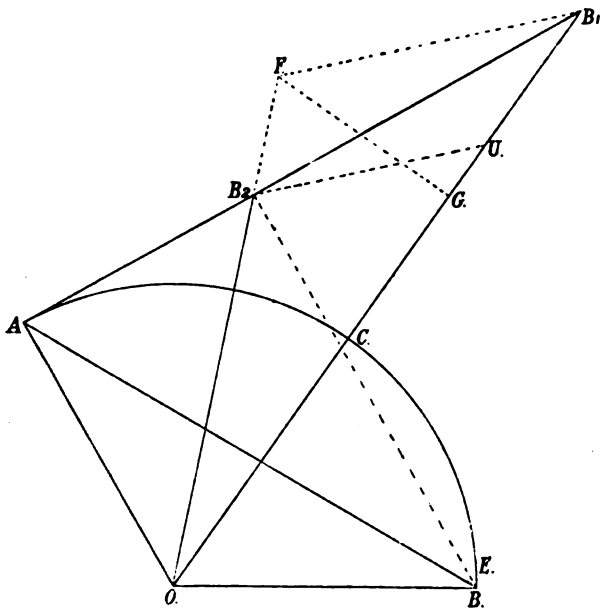

FIG. 2.

then the line AB_1 is very nearly the same length as the arc BCA.

The triangle OAB_1 has then very nearly the same area as the sector OBCA.

From B draw BB_2 parallel to OA. Then $AOB = AOB_2$ in area, and the triangle OB_2B_1 is approximately equal in area to the segment ACB.

Set off $OU = 8''$ along OB_1, draw B_1F parallel to BU to cut OB_2 produced at F, and measure the perpendicular FG from F on OB_1. Then 4FG in inches gives the area of ACB in square inches. It will be found that $FG = 3{\cdot}1''$ approximately, and that the area is 12·4 sq. in.

If the segment be greater than a semicircle, the area OAB must be added to that of the triangle OAB_1; but it will be seen, on drawing a figure and proceeding exactly as before, that OB_1B_2 now gives the sum of the areas of the sector and the triangle.

Unless very great care be taken in stepping off the arc, when it is greater than a semicircle, an appreciable error may be made in the straight line representing the length of the arc. In such cases the semicircular arc length may be first constructed by Kochansky's or some other method.

Many other graphical methods of mensuration, including those for volumes of revolution, are known.

THE GRAPHICAL MULTIPLICATION AND DIVISION TABLE.

At first sight there may not seem any obvious connection between two intersecting straight lines and a multiplication table; yet, when it is remembered that the numbers in the table increase uniformly by the same amount each step and that one straight lines rises uniformly above the other by equal amounts for equal steps along it, the connection becomes plainer. A definite example will make the matter clear. It must, however, be premised that numbers can be represented by lengths: thus, if one inch represents unity all other lengths will represent definite numbers, and any number can be represented by an appropriate length. Also, if lengths drawn from a fixed point in a line in one sense from the point represent positive numbers, those drawn in the opposite sense will represent negative numbers.

To construct a straight line which, with a given line, will give the product of 1·35 *and all numbers from* 0·01 *to* 10 *correct to two decimal places.*

On a sheet of ordinary squared paper, ruled in tenths of inches, mark on two of the thicker perpendicular lines points indicating 0·5, 1·5, 2 . . . 10 in inches. In Fig. 3 these lines are indicated by O*x* and O*y* (the axes along or parallel to which the multipliers and products are read). Only part of the whole figure is shown.

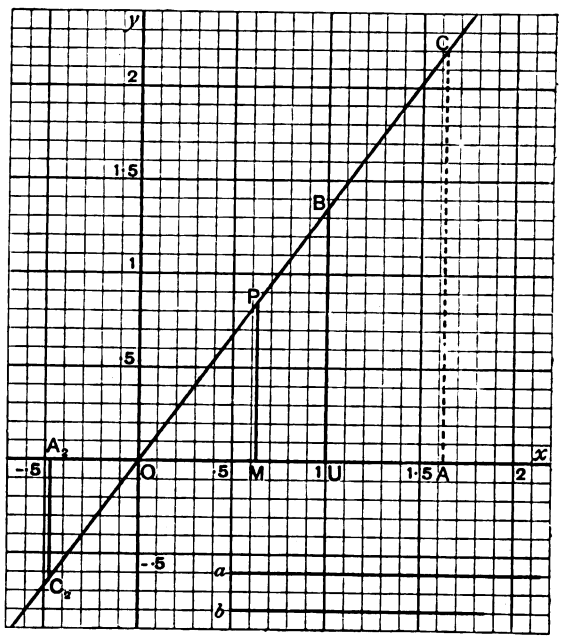

FIG. 3.

At the unit point U in O*x* set upwards $UB = 1{\cdot}35''$. Join OB and produce both ways.

The lines OB and O*x* constitute the multiplication table for 1·35; the ruled horizontal and vertical lines simply enable the products to be obtained without using a separate inch scale.

Suppose $1{\cdot}35 \times 0{\cdot}62$ is required. The point M

where OM = 0·62 is noted, the distance MP is seen to be nearly 0·84, and this is the required product correct to two decimals.

Evidently, wherever P may be in the line OB,

$$\frac{PM}{OM}=\frac{BU}{OU} \text{ and } OU=1;$$

hence

$$PM = 1{\cdot}35 \times OM.$$

For negative numbers like OA_2 ($-0{\cdot}47$), the product $-0{\cdot}47 \times 1{\cdot}35 = A_2C_2 = -0{\cdot}63$. It is negative since it is downwards.

The same lines also give a division table for

$$\frac{PM}{BU}=OM.$$

Thus, to divide 2·19 by 1·35 we simply note the point C where AC = 2·19, and read off the quotient, 1·62 (= OA).

The multiplication tables for numbers other than 1·35 would be other lines, like OB, but making different angles with Ox.

If we had wanted to form a multiplication table for $\frac{2{\cdot}78}{3{\cdot}63}$ then OU would be 3·63″ and UB would be 2·78″.

For numerators large compared with the denominators the divisions along Oy must be marked to represent larger numbers than those along Ox.

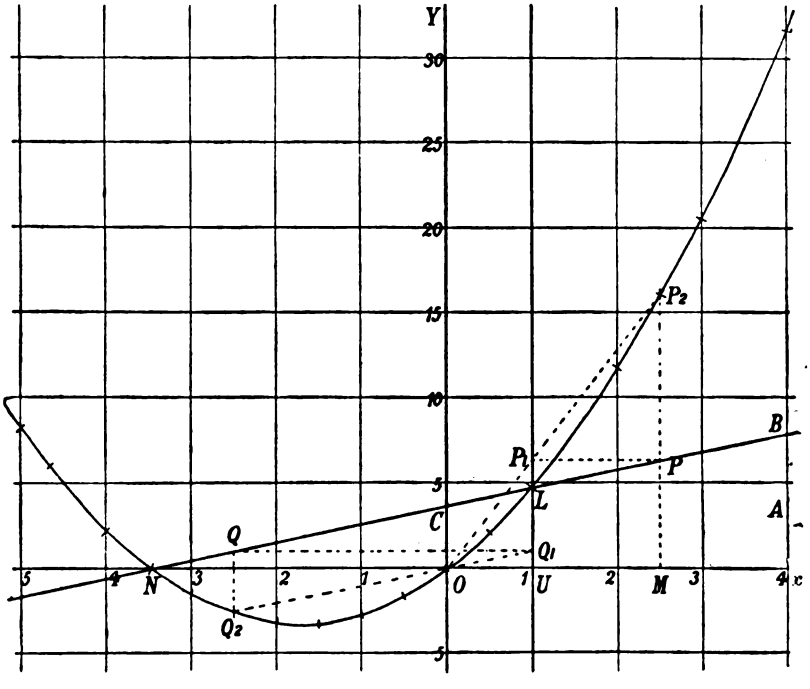

FIG. 4.

The equation to the line.—Denoting the fraction $\frac{BU}{OU}$ by m and the variable multiplier OM by x and the variable product MP by y, we have always

$$y = mx,$$

where m is always the same, while x and y may change.

This is called the equation to the straight line C_2OPBC, and m is called its *slope*.

To add graphically any number, such as a, to these products, mark the point Q, say, on Oy corresponding to this number, and draw through Q a line parallel to OP. This line is represented by the equation

$$y = mx + a,$$

since the distance from Ox to this line is a more than to OP for all points on Ox.

(From this naturally arises the graphs of equation, like $y = mx + a$, *constructed* by means of a, the intercept on Oy, and m, the *slope* of the line.)

Though the product of any number by any other would need an infinite number of sloping lines like OB, yet, in special cases, the product will be given by a simple curve. Examples of this kind are when the second number is proportional to the first or to the first plus a fixed number.

Passing over the special cases of the curves of squares and multiples of squares, take as an example the problem:

To construct graphically the product of any number x (from -5 to $+5$) and $1{\cdot}05x + 3{\cdot}65$; in other words, to construct points on a curve giving the value of $1{\cdot}05x^2 + 3{\cdot}65x$ from x equal to -5 to x equal to $+5$.

Take axes Ox and OY on squared paper and mark as indicated in Fig. 4 the points -5 to $+5$ along Ox and -5 to $+40$ along OY. (Not quite all the curve is shown in the figure.)

Construct the multiplication line $y = 1{\cdot}05x + 3{\cdot}65$ as in the previous example, viz., mark C on OY where OC = 3·65 and draw through C a line of slope 1·05. Instead of going 1 horizontally and 1·05 vertically to fix the slope of the line, it is better to go 4 horizontally from C to A and then 4·2 vertically to B.

CB produced will, with Ox, give $1{\cdot}05x + 3{\cdot}65$ for all values of x between -5 and 5 correct to one decimal.

From any point P on CB go horizontally to P_1 on the unit line at U[1] (see Fig. 4), put a straight-edge along OP_1, and mark P_2 where it cuts PM, the line through P parallel to QY. In a similar manner from other points, such as Q on CB, find points like Q_2 on the curve. Sufficient points must be taken so that a smooth curve can

[1] See remark later concerning the best position for U.

be drawn through them. In the figure the dotted lines are to show the connections between P, P_1, and P_2, and between Q, Q_1, and Q_2. In construction they are not drawn. P should be marked by a fine sharp line approximately perpendicular to CB, P_1 by a line perpendicular to the U line, and P_2 by a sharp cross with perpendicular limbs. The constructions can be rapidly effected if a fine needle be fixed firmly into the drawing board through O.

The smooth curve joining the points is the graph of

$$y = 1{\cdot}05x^2 + 3{\cdot}65x.$$

Proof— Let $OM = x$, then

$$MP = UP_1 = 1{\cdot}05x + 3{\cdot}65.$$

But

$$\frac{MP_2}{OM} = \frac{UP_1}{OU} \text{ and } OU = 1.$$

$$\therefore \quad MP_2 = OM \times MP = x\,(1{\cdot}05x + 3{\cdot}65);$$

or writing

$$y \text{ for } MP_2$$

$$y = 1{\cdot}05x^2 + 3{\cdot}65x.$$

It is perhaps obvious that the curve must go through the three points marked O, L, and N, for $y = 0$ when $x = 0$ and when $1{\cdot}05x + 3{\cdot}65$ is 0, and $1{\cdot}05x^2 + 3{\cdot}65x$ has the same value as $1{\cdot}05x + 3{\cdot}65$ when $x = 1$.

Curves for equations like

$$y = 1{\cdot}05x^2 + 3{\cdot}65x + 6$$

can now be constructed by points, for it is only necessary to increase the old y by 6, *i.e.*, the new Ox must be 6 units below the old Ox.

For equations like

$$y = 1{\cdot}05x^2 - 3{\cdot}65x - 6,$$

the line CB slopes downwards and the new Ox is 6 above the old one; while for equations like

$$y = -1{\cdot}05x^2 + 3{\cdot}65x + 6,$$

U should be taken at -1 instead of $+1$.

To avoid complicating the argument, U was taken at $x = 1$; it is better, however, to take U at or near the largest value of x required. Thus, for Fig. 4, U should be at $x = 4$, and the straight line first constructed should have $y = 4\ (1{\cdot}05x + 3{\cdot}65)$ for its equation. In this case

$$\frac{MP_2}{OM} = \frac{UP_1}{OU};$$

where

$$OU = 4 \text{ and } UP_1 = MP = 4\ (1{\cdot}05x + 3\ 65),$$

so that

$$MP_2 = \frac{x \times 4\ (1{\cdot}05x + 3{\cdot}65)}{4} = 1{\cdot}05x^2 + 3{\cdot}65x \text{ as before.}$$

Evidently in this way any little error made in marking points on the U line will be diminished on the P_2M line if P_2M is to the left of U.

Beginners should take the simplest example of this construction method first, viz., the curve of squares, $y = x^2$, and then construct $y = 1{\cdot}05x^2$, and finally $y = 1{\cdot}05x^2 + 3{\cdot}65x - 2{\cdot}1$.

Constructions for points on the curve of reciprocals, or curve of cubes, &c., can easily be found.

EDUCATIONAL NOTES FROM FRANCE.

By JEANNE MORIN.

HAD not the "Camelots du Roy" held a riotous meeting, the opening of the Paris University would have been almost unnoticed, so much was the Steinheil trial attracting attention. That skirmish must be considered the beginning of war between the Royalist and Republican students; and the youths of the University are anticipating with delight the prospect of many quarrels offering opportunities of shouting, hissing, and forming the "monomes" which give such a curious aspect to the Boulevard St.-Michel. We need not complain of these students being too noisy; anything which leads to a diversion from the strain of study is welcome. Delicacy of constitution in our present days confronts us with serious danger, and overwork breaks the strongest constitution. The increase of knowledge is naturally the cause of overwork, but this *surmenage* could be checked by good methods of teaching and careful regard to the student's health. So thinks the Minister of Instruction publique, who has just sent a circular to all the headmasters of French public schools, requiring from them the most strenuous attention to the health of the students.

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THE delicate students must, the circular insists, be looked after regularly by the school physician, and the parents directed as to what to do for them. Those pupils who enjoy the benefit of a scholarship are to have it withdrawn if they are not physically able to use it to the best advantage; besides, the medical examination will become very strict, and the highest training-schools—l'école normale supérieure de la rue d'Ulm for male students and l'école normale supérieure pour jeunes filles à Sèvres—will be closed to all students who fail to pass "Le certificat d'aptitude physique." By such measures, the Minister hopes to induce teachers, parents, and pupils to look after what Molière calls *notre guenille*. This care should begin at infancy and be continued through life. To this end, in the humblest classes of society, parents should be asked to co-operate with teachers. Consequently, hygiene must have a prominent place in the course of studies. But many prejudices had to be overcome before we could teach, in boys' schools, the dangers of an indulgent life, and in girls' schools the bringing up of the young. Now a good course in hygiene is given in every high school, but, unfortunately, it is inadequate to the age of the pupils and the other courses of study. For instance, a girl of fourteen studies *les aliments hydro-carbonés et azotés* when the chemistry course runs along other lines, and girls of fifteen are taught how to nurse drowned and poisoned people when not a word is told them on how to keep healthy and strong. Do the authorities fancy that by this omission girls will be taught to think only of others?

We spoke a few months ago about an exchange of professors. At the beginning of last year special instructions were given to make the sojourn of professors in foreign lands as useful and agreeable as possible. In France we are all well prepared for foreign teachers, and we hope that, instead of receiving them *au pair*, we shall soon be able to give them the equivalent of board and lodging in order that they may live, if they so desire, outside the institution in which they lecture. But they should be warned against diffidence and shyness, which are too often taken for pride and haughtiness, and prevent cordial relations between the members of the staff. In fact, every country which has taken advantage of this exchange of teachers becomes more and more aware of the usefulness of the institution, and consequently does its best to enlarge and improve it. For a teacher nothing is better than to see different methods of teaching at work in various countries, and such a comparison will improve them more than many courses of pedagogy. Besides, a happy sojourn can do much to dissipate the strongest prejudices, and gives a good impression of the land visited.

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For instance, French students, "boursiers," who, last summer, spent their holidays in England spoke very highly of the English, and praised greatly the honesty of their tradesmen, the sweetness of their home life, and their respect for religion. A student of Oxford, M. George Bernard, was so much impressed by the good side of English life and so thankful for the hospitality received at this old university, that he took very eloquently the defence of the English university against those who tried to prevail upon French students to go to American universities. On that occasion, Mr. Hartog, Prof. M. E. Sadler, and M. Muissen wrote also about the many advantages that French students can find in England, and Mr. D. Fraser, of Edinburgh, placed himself at the disposal of French students wanting to visit the Scottish universities. There is just the Channel to cross, and it is far more natural to come first in contact with a people to whom the Americans stand only as offspring.

* * *

Those who read my last Educational Notes from France know that optional courses in Latin have been arranged in the girls' high schools of Lille. The experiment has proved very successful from every point of view, and an inquiry has been made among the girls who attended the Latin classes which proves that they are well satisfied. They like Latin not only because it allows them to prepare for the *baccalauréat* and to follow the same studies as men, but also because they think such study agreeable, useful, and not too difficult—so they affirm. It is not, perhaps, a bad way of inquiring; it is *les intéressés* who should know, if they are wise, what is best for them.

PERSONAL PARAGRAPHS.

To fill the headmastership of Clifton College to be vacated by the Rev. A. A. David, the governors have elected Mr. John Edward King, headmaster of Bedford Grammar School since 1903. Clifton naturally returns to Clifton. Mr. King was educated at Clifton, served a year as assistant-master there, and is the first Old Cliftonian to be elected to the headmastership. He was elected a classical scholar of Lincoln, Oxford, in 1877, and a fellow of that society in 1882, and had experience as an assistant-master at Clifton and St. Paul's, during the latter period (1884–7) producing with Mr. Cookson a comparative grammar of Greek and Latin, the well-known "King and Cookson." From 1887 to 1891 he was a tutor of Lincoln, and was then appointed high master of Manchester Grammar School, and after twelve years at Manchester went as headmaster to Bedford Grammar School. He has been a successful headmaster, and at the Headmasters' Conference, though not an attractive orator, gives good counsel.

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The new headmaster of the King's School, Rochester, is the Rev. Richard Frederick Elwyn, house-master at Felsted School. He is a son of the late Canon Elwyn (formerly Master of the Charterhouse), and was educated at King's School, Canterbury, whither he returned after his career at Trinity, Cambridge, to take charge of the junior school. Thence he went to Felsted in 1893.

* * *

The Lancaster Education Committee had a wide field to select from in its appointment of a headmistress of the Lancaster Girls' Grammar School. Out of sixty-five candidates was chosen Miss Mary Phillimore. She was educated at the Bath High School and Cheltenham Ladies' College; she was an assistant-mistress at Cheltenham, and headmistress of York High School and of the Brighton and Hove High School. She has found time also to broaden her outlook by serving on the North Riding Education Committee, by visiting schools in the United States and Canada, and by acting as an occasional inspector of secondary schools under the Board of Education.

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In these days, when the closure is rigorously applied to schoolmastering at the age of sixty, it is interesting to hear of a master of a public school dying in harness at the age of seventy-seven. This was the case of a popular master at Dulwich College, Mr. George Bell Doughty, who recently died at Cranleigh, Surrey. He joined the staff of the reconstructed Dulwich College in 1861, and served under three "Masters"—Canon Carver, Bishop Welldon, and Mr. A. H. Gilkes, the present head. He had nearly completed forty-nine years' work, which was chiefly in connection with mathematics and drawing. He did not long survive Canon

Carver, who both appointed and (during early days) paid him.

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THE REV. JOHN BICKLEY HUGHES, formerly for twenty-six years headmaster of Blundell's School, Tiverton, died recently at the age of ninety-two. He matriculated at Queen's, Oxford, so far back as 1835, and graduated from Magdalen in 1839. Appointed to an assistant-mastership at Marlborough in 1843, he was chosen as second master, or usher, of Blundell's in 1844, and in 1847 became headmaster. He celebrated the diamond jubilee of his wedding in 1908. He was an energetic man, and showed his keenness in ecclesiastical antiquities and in several forms of sport.

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MR. CHARLES NORMAN MORRISON, headmaster of Geelong College, Victoria, was recently killed while out shooting. He was the third son of the late Dr. George Morrison, who founded Geelong College in 1841. He succeeded his father as headmaster in 1898.

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ON Principal Hadow (to whose credit I inadvertently omitted in a recent note to put his great work, "The Oxford Dictionary of Music") Oxford has bestowed the degree of Doctor of Music, *honoris causa*. After the ceremony he was the guest of the Oxford University Musical Club at lunch in New College Hall, and Sir Walter Parratt paid a tribute to "the illuminating and helpful nature of his musical criticism," and the strong influence he had exercised in the musical life of Oxford.

* * *

A FAMILIAR figure in Oxford life in my time and since has been Dr. Hastings Rashdall, the historian of the mediæval universities of Europe. He has been appointed to a canonry of Hereford Cathedral. He was educated at Harrow, graduated from New College, and gained the Stanhope and Chancellor's essay prizes. He has served on the staff of University College, Durham, and of Hertford and Balliol Colleges, Oxford, has been fellow and tutor of New College since 1895, and was preacher of Lincoln's Inn, 1898–1903.

* * *

ONE of the most prominent names in the post-Darwinian development of Victorian literature and science is that of Edward Burnett Tylor, who has resigned his Oxford professorship of anthropology. His first book, on the Mexicans, was published in 1859, the year in which the "Origin of Species" was published. "Primitive Culture," published in 1871, and "Anthropology," in 1881, are books which have had a very wide and deep influence in moulding the thought of the present generation.

* * *

PAULINES, and all who are interested in the history of our public schools, will be grateful to Mr. R. F. J. McDonnell for his "History of St. Paul's School." Among the high masters of St. Paul's since Lily and Mulcaster have been numbered many teachers and scholars of eminence, and the roll of famous alumni is a very long one.

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MR. R. BLAIR, education officer of the London County Council, has been elected a corresponding member of the National Education Association of America.

ONLOOKER.

SCHOOLBOYS AND SCHOOL WORK.[1]

WHEN we find the headmaster of Eton, with the concurrence of the headmaster of Winchester, advocating the claims of the mother tongue, handicraft, music, and drawing to a place in the curriculum of higher-class schools for boys, we are inclined to ask: Is Saul also among the prophets? But while Mr. Lyttelton's book is to be welcomed, not only as an interesting contribution to educational theory, but as a sign of the times, the practical value of his concessions must not be overestimated. For one thing, although he expresses the pious hope that the reforms he suggests will soon be adopted at Eton and Winchester, he makes it clear that he represents only the advance guard of those who are responsible for our public-school education. He is obliged to admit that the reactionary attitude of the authorities at the older universities and the diversity of opinion among headmasters make the prospect of immediate advance rather hopeless. For the curriculum of the preparatory schools is naturally determined by the entrance and scholarship examinations of the public schools, while the work of these must be moulded by the conditions of entrance to the universities of Oxford and Cambridge. In the next place, it would appear from the policy that Mr. Lyttelton puts forward that, while his face is set in the right direction, he is not yet prepared to go far enough to satisfy thorough-going educational reformers.

To most of what is said as to the studies appropriate for preparatory schools, a warm approval can be given. Mr. Lyttelton would banish Greek altogether from their curriculum, except for the few boys who are beyond their companions in other subjects. The time thus set free would be largely devoted to the cultivation of "sense-activities," the educative value of which is thoroughly recognised and ably vindicated. Mr. Lyttelton may be over-sanguine in saying that "almost any certificated teacher can succeed in teaching the elements of chorus singing," but he is clearly right in urging the importanc of music at every stage of school life. In his disposal of the rest of the time his views will meet with less readv acceptance. While he is fully alive to the need of a more thorough study of English, he is rather contemptuous with regard to French, and considers it essential that Latin should have a large

[1] "Schoolboys and School Work." By the Rev. the Hon. E. Lyttelton. xxvv+140 pp. (Longmans.) 3s. 6d.

share of attention from the age of ten upwards. While he will win general agreement in his forcible plea for more rational methods of teaching Latin, in order to secure that the pupils shall have some sense of progress at every stage, many will demur to his assumption that reflection can be prompted only by the study of a dead language.

When the venue is changed to the public school, it is, of course, the question of compulsory Greek that comes to the front. Mr. Lyttelton makes an interesting classification of boys into the scholar-like, the mediocre, and the laggards, estimating these classes roughly at 25 per cent., 45 per cent., and 30 per cent. respectively. He would postpone all specialisation until the rather late age of sixteen and a half, and he reasonably objects to the so-called "modern side" as an unprofitable compromise; but he would exempt the laggards from Greek altogether, mostly in order that they might have time to make their study of Latin serve some purpose. A certain number of the mediocre class would also be exempted from Greek, on the ground that they would learn nothing from that language which they could not learn from Latin. Most of this class, however, would continue the study of Greek, in order apparently to form an appreciative public for the work of the real scholars. Mr. Lyttelton is naturally dissatisfied with the requirements in Greek at the entrance examinations of the older universities, holding that if the subject is retained at all, the standard should be raised so as to demand serious preparation instead of profitless cram.

Mr. Lyttelton is very much afraid of any encroachment by the State on the independence of the public schools, fearing that a ruthless hand might be laid on their curriculum; but it may be suggested that there is much less danger in that direction than there is from the obscurantist traditions that now control it. It would be interesting, by the way, to know the grounds of Mr. Lyttelton's conviction that inspection by the universities "cannot be searching."

A LITERARY HISTORY OF ROME.[1]

THE publisher was so good as to send us an advance copy of this book: we trust the long time that has passed will not suggest neglect. The fact is, a book like this cannot be dismissed in a day. A literary history may be either a work of infinite detail, like Teuffel's, or a work of taste, like Mackail's: in either case, to examine it needs care. We have found Mr. Duff's book to belong to both heads; but it has more of the second than the first. For this we are grateful. One Teuffel is enough (not that we wish to disparage that excellent work); but the more Mackails or Duffs the better. We have only one little bone to pick with Mr. Duff, and that is that his own style is apt to be florid: "a milestone on the march of oratory" is a type of image that does not help the understanding, and much of the book might well be simpler. However, that is a fault of the age.

What Mr. Duff does give us is a definite image of the chief personages of his story. Some that had been but names to us are now men: not only some who have left remains, less or greater, but even one here and there, like the poet Laevius, who has left none, so that (of course) some have been found to deny him existence. Mr. Duff's comparisons with the moderns are often very happy, as when he compares Cato to Wiclif's sermons. How excellent, by the way, is that maxim of Cato's—*rem tene, verba sequentur!*

We must also commend Mr. Duff's specimens and translations. All the chief authors are illustrated by specimens, where this was possible, and these are translated into verse or prose, generally (we suppose) by Mr. Duff. These translations are admirable. "Sirmio" becomes a sonnet (p. 317), a happy thought. Horace's bore appears in plain prose, a sort of Dolly Dialogue (p. 515); we note, by the way, that the poet's debt to Lucilius is made clear on another page. The other renderings all please.

Mr. Duff's book is not one that supplies ready-made literary judgments for schoolboys to reproduce; but he gives us reasoned accounts of his authors, which he generally justifies by specimens, and his remarks by the way (like that on Wiclif just cited) are often illuminating. His statements of facts are supported by notes and references, and we think they will be found trustworthy. He binds up his story with the history of the times and the characteristics of the people, and the result is a lifelike picture. The book is readable all through, and can be confidently recommended to all those interested in Rome, professionally or otherwise.

[1] "A Literary History of Rome, from the Origins to the Close of the Golden Age." By J. Wright Duff. xvi+698 pp. (Fisher Unwin.) 12*s.* 6*d.* net.

MODERN EXPERIMENTAL PSYCHOLOGY.[1]

A RE-ISSUE of Prof. Titchener's "Outline of Psychology" in a very much enlarged form is a welcome sign of the growing interest in the experimental treatment of the subject, for, although this book is not a laboratory manual in any sense, the point of view of the writer is consistently that of the ordinary scientific man whose views are based upon experimental investigations. The greater part of the present volume deals with sensation, the classical ground—if such a term is justified of a subject less than half a century old—of the experimental psychologist; but it also contains chapters on the scope and method of psychology, and on the difficult and as yet ill-understood subjects of affection and attention.

[1] "A Text-book of Psychology." By Edward Bradford Titchener. Part I. New York: The Macmillan Co.) 6*s.* net.

Prof. Titchener writes with admirable clearness whenever he is describing an experiment or discussing its results. We cannot help feeling that he must be a teacher whose directness and clearness win his pupils to him and his subject in quite a remarkable way. The same qualities distinguish his laboratory manuals, in which both student and instructor find their difficulties so often anticipated and dealt with. This general text-book, however, demands a broader treatment, in which the author is not always quite successful. It is written from a point of view which many psychologists must regard as profoundly unsatisfactory. Whatever arguments are to be urged in favour of the particular position, it cannot be said that the author has been happy in his statement of it. In the introductory chapter the critical reader tumbles over inconsistencies which are surely not altogether a result of the point of view in question. Thus mind is defined as "the sum total of human experiences considered as dependent upon the experiencing person." Now, whatever view we may take of this definition—and to the present writer it is wholly objectionable—one thing emerges clearly enough from its acceptance. There can be no question of a mind in animals; much less can we think of plants as possessing minds. Even the dog's experiences are canine and not human. In spite of his definition, however, Prof. Titchener tells us that "we have no right to deny minds to the higher animals"; nay, further, that "the range of mind appears to be as wide as the range of animal life." It would be a nice calculation to cast up the sum of human experiences which makes the mind of Amœba!

Moreover, in making this extension, Prof. Titchener has consciously gone beyond the cases of animals provided with a nervous system. "It is difficult," he writes, "to limit mind to the animals that possess even a rudimentary nervous system." It is startling, then, to read, some pages further on, that "the nervous system does not cause, but it does explain mind." Is this not an amusing reversal of the commoner attitude of mind which seeks the explanation of puzzling physical phenomena in some spiritual agency? A nervous system cannot surely be said to explain mind, if there are cases of the presence of the one in the absence of the other. To admit or even to suggest that mind exists in the lowest forms of animal life does not seem consistent with so positive an assertion about the necessary connection between the two. Prof. Titchener seems content to regard psychology as a mere superstructure to physiology, and some other experimental psychologists are inclined to agree with him, but none will regard the position as quite so full of fundamental contradictions as would appear from this particular account.

This want of consistency is probably due to hasty writing, and the same cause may account for some rather slipshod statements in other parts of the book. In the chapter on smell, Prof. Titchener says: "If you hold your nose, you cannot distinguish apple from onion or raw potato, or vinegar from claret." He quite ignores the fact that what we commonly call the taste of a thing often includes its characteristic "feel" to the tongue. However bad my cold, I can distinguish an onion from a potato, if not a potato from an apple. In the particular instance, the want of accuracy may not be important, but it illustrates a tendency to popularise which makes the book attractive and easy to read, at the expense of the rigid accuracy which should belong to a standard text-book.

In spite of all this, however, the author has given us a most interesting re-statement of modern psychological doctrine. His style is so clear that there is no difficulty in understanding exactly what is meant. He is always frank in the face of difficulties, and his very inconsistencies are at any rate easy to make out, for they are never concealed in the intricacies of sentence structure. All who read this volume will await with some eagerness the appearance of the second volume, in which it will be interesting to see how the "conative pretender" is finally dealt with.

SECONDARY EDUCATION IN SCOTLAND.[1]

THE scope of this history extends far beyond the comparatively modest limits indicated by the title. It is in reality a history of Scottish education in all its branches—elementary, secondary, and university. As the author indicates in his preface, the interaction of educational developments in every country is much greater than is generally supposed. This is particularly true of Scotland, where until recent times there has never been any real line of demarcation between the various classes of schools. Every type of school may be said to have had, in theory at least, an educational course which embraced all stages from learning the alphabet to preparing for the university. The parish school, the burgh and grammar schools, and the collegiate schools all alike looked to the university as their *terminus ad quem*, and not unfrequently sought even to invade the province of these august bodies. Even as late as the close of the eighteenth century we find the principal of Edinburgh University petitioning the governors of the local high school to restrain the rector of that school from teaching Greek and "thereby depriving the professor of Greek of students who would otherwise have attended his classes." Mr. Strong was therefore amply justified in taking the wider view, and the work gains considerably in interest thereby.

In the preparation of this volume the author has been indebted to Grant's "History of Burgh Schools" and Prof. Edgar's "History of Early Scottish Education"; but it is essentially an original work. It is clearly the fruit of long and

1 "A History of Secondary Education in Scotland." By John Strong viii+288 pp. (Clarendon Press.) 7s. 6d. net.

patient research, as the full references to authorities, both printed and manuscript, amply prove. The story of the rise and progress of Scottish education as here unfolded is a singularly fascinating one, and full of intense human interest from cover to cover.

In the opening chapters the influence of the early Celtic Church in setting up an educational tradition is rightly insisted on. Wherever the humble Columban monastery rose, there also beside it was found the Columban school, not for young ecclesiastics only, but, as Bede indicates, for all ranks and classes. In other Protestant countries, the Reformation severed the old-time connection between the Church and the school; but in Scotland, instead of loosening the bonds, it knit them more firmly together. The reformed Church, indeed, dominated every department of the national life—intellectual, social, and moral. Buckle has thundered against its paralysing influence on the minds and morals of the people. But, as Mr. Strong indicates, there is another side to the shield. For almost 300 years the history of education is the record of a continuous struggle by the Church to quicken the national conscience in regard to the vital interests of education. It had to contend with the selfishness and greed of the nobles, and the indifference of the great mass of the people; but it remained true to its ideals, and kept the lamp of knowledge burning, feebly and flickeringly perhaps, but still burning, over the length and breadth of the land.

Mr. Strong does ample justice to the noble system of educational polity outlined by Knox in the "First Book of Discipline." In its breadth of conception and firm grasp of educational principles, it challenges comparison with the most enlightened systems of the present day. First, there was to be a parish-school course for children up to the age of eight; next, a grammar-school course up to the age of twelve; then a collegiate course to the age of sixteen; and, finally, a university course to be completed about the age of twenty-four. The schools were to be staffed "with sufficient masters with honest stipendis." All were to be compelled to attend school, rich and poor alike, the former at their own expense, the latter at the charge of the State, "until such time as trial be tackin' whether the spirit of docilitie be fund in them or not." Owing to the rapacity of the nobles and court, this notable scheme never came to full fruition; but enough of it was saved alive to give Scotland for 300 years an educational system far in advance of any other European nation.

The concluding chapters on the leaving certificate, State aid, and the Scotch Education Department have little of the novelty of the earlier part; but they are accurate down to the minutest detail, and well worthy of the study of even the most up-to-date student of education.

The value of the book is enhanced by a full table of contents and an admirable index. The purpose of the map that is appended is not immediately apparent. A word or two of explanation would not be out of place.

THE MOST NOTABLE SCHOOL BOOKS OF 1909.

The short lists of recent school books which it has been customary to publish in the first number of new volumes of The School World have proved of much assistance to teachers anxious to adopt the best available text-books in their classes, and we are glad to be able to continue the practice. The compilation of the following lists of books published during 1909, or too late in 1908 for inclusion in the lists prepared for our issue of last January, has been entrusted to experienced teachers familiar with the needs of schools. The compilers have had a free hand, and attention has not been confined to books reviewed in these columns.

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

Modern Languages.

Karl Breul, "The Teaching of Modern Foreign Languages." (Cambridge University Press.) 2*s.* 6*d.* net.

Every fresh edition (this is the fourth) contains valuable additions, which render the book to some extent a new one; we therefore do not hesitate to recommend it again.

F. Y. Eccles, "A Century of French Poets." (Constable.) 10*s.* 6*d.* net.

An excellent selection illustrating the history of French poetry during the last hundred years.

Mary Duclaux, "The French Procession: a Pageant of Great Writers." (Unwin.) 12*s.* 6*d.*

A book of unusually valuable appreciation.

F. Brunetière, "Histoire de la littérature française classique." Tome I. 3e Partie. "La détermination de l'idéal classique." (Delagrave.) 2.50 francs.

H. E. Berthon and V. G. Starkey, "Tables synoptiques de phonologie de l'ancien français." (Frowde.) 2*s.* 6*d.* net.

Most valuable for the student of old French.

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

A good piece of work on reform method lines.

W. M. Poole and E. L. Lassimonne, "Textes et Questions." (Murray.) 1*s.* 6*d.*

Fifty anecdotes and episodes, with varied and interesting reform exercises.

F. Kummer, "Deutsche Literaturgeschichte des 19ten Jahrhunderts." (Dresden: Reissner.) 10*s.*

A thoughtful and suggestive history of nineteenth-century literature on novel lines.

G. Könnecke, "Deutscher Literaturatlas." (Marburg: Elwert.) 6*s.*

This admirable collection of pictures and facsimiles should be in the library of every school where German is taught, especially now that the price has been so much reduced.

J. E. Barker, "Modern Germany." (Smith, Elder.) 10*s.* 6*d.* net.

This is the third edition, very greatly enlarged and completely revised to February, 1909. A fine book of reference for the school library.

Karl Breul, "New German Dictionary." (Cassell.) 3*s.* 6*d.*

It may not be generally known that a cheap edition of this excellent dictionary has now appeared.

W. Viëtor, "Deutsches Ausprachewörterbuch." (Leipzig: Reisland.) 1.20 m. each part; to be completed in about eight parts.

A German pronouncing dictionary has long been needed.

W. Rippmann, "Exercises in German Grammar and Word Formation." (Dent.) 1s. 8d.

Useful exercises, without translation.

E. B. Huey, "The Psychology and Pedagogy of Reading." (Macmillan.) 6s. net.

A book of great interest to the teacher and student of language; weak only in the treatment of phonetics.

Classics.

First Steps in Latin.

"Elementary Latin: being a First Year's Course." By F. J. Terry. Pupil's edition and teacher's edition. (Methuen.) 3s. 6d. net.

"Limen: a First Latin Book." By R. S. Conway and W. C. F. Walters. 2s. 6d. "Limen Appendix: Suggestions for Teachers." 6d. (Murray.)

Latin Composition.

"Latin Composition." By W. R. Hardie. (Arnold.) 4s. 6d. net.

A fresh and original book for the more advanced student.

School Editions.

"The Famulus of Terence." Edited by J. Sargeaunt and A. G. S. Raynor. (Clarendon Press.) 2s.

The "Eunuch" made suitable for schools.

For the Master.

"The Acharnians." Edited by W. Rennie. (Arnold.) 6s. net.

"The Acharnians." Edited by W. J. M. Starkie. (Macmillan.) 10s. net.

With prose translation.

Jebb's "Theophrastus." Edited, with Notes, by J. E. Sandys. (Macmillan.) 7s. 6d. net.

"The Phoenissae of Euripides." Edited by A. C. Pearson. (Cambridge University Press.) 3s. 6d.

"Social Life in Rome in the Age of Cicero." By W. Warde Fowler. (Macmillan.) 10s. net.

"The Annals of Tacitus, XI.–XVI." Translated, with Introduction and Notes, by Prof. G. G. Ramsay. (Murray.) 15s. net.

"The Ancient Greek Historians." By J. B. Bury. (Macmillan.) 7s. 6d. net.

A critical study, in lectures.

"Introduction to the Natural History of Language." By T. G. Tucker. (Blackie.) 10s. 6d. net.

English Language, Grammar, and Composition.

"The Teaching of Grammar." By Laura E. Brackenbury. (Murray.) 2s.

A sensible method of teaching grammar attractively set forth.

"Elementary Lessons in English Grammar." By H. C. Wyld. (Clarendon Press.) 2s.

Seeks to explain grammatical ideas in simple style: based on language as spoken, not written.

"Mason's Senior English Grammar." Revised by A. J. Ashton. (Bell.) 3s. 6d.

A scholarly revision of a standard work.

"English Grammar and Composition." By A. M. Williams. (Longmans.) 4s. 6d.

Very comprehensive: includes chapters on style and versification.

"The Teaching of English Composition." By E. E. Covernton. (Dent.) 1s. 6d. net.

Very interesting and suggestive.

"English Composition." By F. T. Baker and H. V. Abbot. (Bell.) 3s. 6d.

"Writing and Speaking." By C. S. Baldwin. (Longmans.) 5s. net.

Both of American origin. Useful: but to be used with caution.

"The Sounds of Spoken English." By Walter Rippmann. (Dent.) 2s. net.

An admirable manual of ear-training.

"A First Précis Book." By G. A. F. M. Chatwin. (Arnold.) 2s. 6d.

Excellent passages, prose and poetry, out of many writers, from Shakespeare to J. M. Barrie.

History.

European.

"Six Ages of European History (476–1878)." By various writers. (Methuen.) 2s. 6d. each.

Six volumes, dealing with consecutive periods.

"Readings in Modern European History." By J. H. Robinson and C. A. Beard. (Ginn.) Vol. i., 6s.; vol. ii., 6s. 6d.

Extracts from sources, with connecting narrative, dealing with the last two centuries.

"Modern History." By A. J. Evans. (Horace Marshall.) 2s. 6d.

An introduction to the history of Europe, 1500–1870.

British.

"A Constitutional History of England." By A. M. Chambers. (Methuen.) 6s.

Especially up-to-date in the earlier periods.

"History of Scotland." Vol. iii. By P. H. Brown. (Cambridge University Press.) 4s. 6d. net.

Completing Prof. Brown's standard History of Scotland, and coming down to the Disruption of 1843.

"The Reign of Queen Victoria." By J. H. Rose. (Blackie.) 1s. 9d.

An introductory sketch.

"Notes on British History." By W. Edwards. (Rivingtons.) Three parts, 2s. net each.

A useful class manual.

"The British Empire." Edited by A. F. Pollard. (League of the Empire.) 5s. net.

A useful book of reference.

Local.

"A School History of Durham." By F. S. Eden. "A School History of Essex." By W. H. Weston. "A School History of Hampshire." By F. Clarke. (Clarendon Press.) 1s. 6d. net each.

"Leeds and its Neighbourhood." By A. C. Price. (Clarendon Press.) 3s. 6d.

A history of England with illustrations from Yorkshire.

"A London Reader." By F. W. G. Foat. (Methuen.) 1s.

Geography.

General.

"The New Outlook Geography," or "How People Live." By W. C. Brown and P. H. Johnson. (Harrap.) 1s. 6d.

Adapted for children, *aetat.* nine to eleven.

"The Round World." By J. Fairgrieve. (Black.) 1s. 4d.

Strong on the *human* note.

"Practical Exercises in Geography." By B. C. Wallis. (Macmillan.) 2s. 6d.

As good as its name—full of problems and exercises. One of the "Practical Geographies" series.

"Practical Geography." Part II. By J. F. Unstead. (Clarendon Press.) 1s. 6d.

Exercises on world geography.

"A Sketch of Historical Geography." By Keith Johnston. (Stanford.) 3s. 6d.

An excellent book for the teacher or for the school library.

Special.

"British Isles. By Road and River." By E. M. Wilmot-Buxton. (Methuen.) 2s.

A *descriptive* geography of the "Reader" type.

"A Geography of the British Isles." By A. Morley Davies. (Macmillan.) 3s.

One of the "Practical Geographies" series, and largely composed of exercises.

"Cambridge County Geographies." "Norfolk," "Suffolk." By W. A. Dutt. "Somerset." By F. A. Knight and L. M. Dutton. "Kent," "Essex," "Surrey," "Sussex." By G. F. Bosworth. "Westmorland." By J. E. Marr. "Hertfordshire." By R. Lydekker. "Wiltshire." By A. G. Bradley. (Cambridge University Press.) 1s. 6d. each.

Ten very interesting compilations of combined local geography and history.

"The British Empire" and "Asia." By Ellis W. Heaton. (Ralph, Holland.) 1s. 6d. and 2s.

The sixth and seventh volumes of the author's "Scientific Geography"; a good cram book.

"Asia." By A. J. Keane. (Stanford.) 15s.

Vol. ii. of the well-known "Compendium"; a second edition, revised and corrected.

"Africa and Australia." By J. B. Reynolds. (Black.) 2s.

A volume of the "Regional Geographies."

"The Voyages of Drake and Gilbert." By E. J. Payne and C. R. Beazley. (Clarendon Press.) 2s. 6d.

Atlases.

"New School Atlas of Comparative Geography." (Philip.) 2s. 6d.

Quite sound and well worth the price.

"Edinburgh School Atlas." (W. and A. K. Johnston.) 1s.

Mostly physical maps with red political boundary lines; up-to-date.

"The World's Chief Industries." (Philip.) 2s.

Twelve commodities mapped out with statistical matter and explanatory letterpress; very suggestive and of value, though the statistics are hardly up-to-date.

"Handy Atlas and Gazetteer of the British Isles." (Philip.) 7s. 6d.

Useful for reference.

"Diagram Hand Maps." (Philip.) 1d. each.

The newest series includes orographical maps of S.W. Asia, E. Alps, Greece, Iberian peninsula, Russia, Switzerland.

Wall Maps.

"New Orographical Series—British Isles." (Stanford.) In sheets, 16s.

One of the maps issued under the direction of Mr. H. J. Mackinder, and therefore very good.

"Bathy-orographical Series—Pacific Ocean, Indian Ocean, Atlantic Ocean, British Isles, South America, Asia, Africa." (W. and A. K. Johnston.) 12s. each.

All very good. The first three make up an excellent map of the world on Mollweide's projection.

"Oroscopic—South America." (Meiklejohn and Holden.) 6s.

Cheap; effective at a distance.

"Political—The World." (Philip.) 14s.

The British Empire is the chief feature of this Mercator map.

Pictures.

"Philips' Geographical Pictures." Edited by P. H. L'Estrange. (Philip.) 21s.

Twenty plates, 20 in. by 14½ in.; very fine and most instructive.

"Black's Geographical Pictures—Mountains." Three packets. (Black.) 6d. each.

Cheap, pretty, well selected, rather small.

Mathematics.

This year there has been a scarcity of books published on the more elementary portions of the subject, probably owing to the large number published last year.

"Practical Arithmetic." By W. G. Borchardt. (Rivingtons.) 4s. 6d.; without Answers, 3s. 6d. Also in two parts.

A thoroughly practical book, including easy examples on mensuration and specific gravity.

"A New Algebra." By S. Barnard and J. M. Child. (Macmillan.) Part IV., 1s. 9d.

This part contains an excellent exposition of approximate values and irrational numbers.

"Elementary Algebra." By A. E. Layng. (Blackie.) 4s. 6d.

The main feature of this book is the clearness of its exposition. It is written in two parts: the short Part I. is arranged as an introductory course, extending to simple equations, while Part II. covers convergency and the logarithmic series.

"Geometry for Beginners." By C. Godfrey and A. W. Siddons. (Cambridge University Press.) 1s. "Notes and Answers to Exercises," separately, 4d.

An excellent introduction to geometry, inspired mainly by the Board of Education circular of March, 1909. The notes indicate how their well-known "Geometry" may be used by those who prefer to follow the circular referred to above.

"Concurrent Practical and Theoretical Geometry." By W. J. Potter. (Ralph, Holland.) 4s. 6d.

The general plan of the book is a carefully graduated set of "investigation exercises," a formal proof of the proposition, and, in conclusion, numerical and graphical exercises on it. It is also published in several parts.

"Mathematical Tables." By W. M. Gibbs and G. E. Richards. (Christophers.) 8d.

An excellent and inexpensive collection of tables and mathematical constants (bound).

"Problem Papers in Mathematics." By R. C. Fawdry. (Macmillan.) 4s. 6d.; without Answers, 3s. 6d.

A carefully graduated course of papers on thoroughly practical lines, influenced to a great extent by the Army examinations.

"Plane and Spherical Trigonometry." By W. A. Granville. (Ginn.) 5s. 6d.

The exercises are very varied and practical.

"A First Dynamics." By C. S. Jackson and W. M. Roberts. (Dent.) 5s.

The notion of work is adopted as the starting-point of this treatment of kinetics. The various systems of units in use are clearly set forth. The questions discussed are of a more practical nature than usually met with in corresponding books, and the book contains an excellent collection of exercises.

"Experimental Mechanics." By F. Charles and W. H. Hewitt. (Bell.) 3s. 6d.

An excellent treatment of both statics and kinetics without formal proofs, and assuming only an elementary knowledge of trigonometry.

"Elementary Mechanics of Solids and Fluids." By A. C. Jones and C. H. Blomfield. (Arnold.) 4s. 6d.

An excellent attempt to introduce simultaneously statics, kinetics, and hydrostatics. The exercises are numerous, mainly numerical, and very varied.

For teachers concerned with the highest branches of school mathematics the following books will be found extremely interesting:

"A Course of Plane Geometry for Advanced Students." By C. V. Durell. (Macmillan.) Part I., 5s. Part II. to follow.

"Practical Solid Geometry." By the Rev. P. W. Unwin. (Bell.) 4s. 6d.

"Differential and Integral Calculus." By A. E. H. Love. (Cambridge University Press.) 5s.

An excellent treatment of the subject, assuming no knowledge of the binomial theorem or the addition theorem in trigonometry.

"Spinning Tops and Gyroscopic Motion." By H. Crabtree. (Longmans.) 5s. 6d.

A clever and interesting discussion of natural phenomena from an elementary point of view, which forms an excellent introduction to rigid dynamics.

Chemistry and Physics.

CHEMISTRY.

For Class Use.

"Junior Chemistry." By R. H. Adie. (Clive.) 2s. 6d.

"The Elements of Organic Chemistry." By E. I. Lewis. (Clive.) 2s. 6d.

"Elementary Chemistry." By Hollis Godfrey. (Longmans.) 4s. 6d.

The author is head of the department of science in the Girls' High School of Practical Arts, Boston, Mass.

"A Practical Chemistry for Schools and Technical Institutes." By A. E. Dunstan. (Methuen.) 3s. 6d.

"An Organic Chemistry for Schools and Technical Institutes." By A. E. Dunstan. (Methuen.) 2s. 6d.

PHYSICS.

For Class Use.

"A Class Book of Physics." By R. A. Gregory and H. E. Hadley. (Macmillan.) 4s. 6d. Also sold in parts at 2s. and 1s. 6d. per volume.

"Light and Sound." By W. S. Franklin and Barry Macnutt. (Macmillan.) 5s. net.

"Practical Physics." By Lionel M. Jones. (Longmans.) 3s.

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

For the Use of Teachers.

"Outlines of Chemistry with Practical Work." By H. J. H. Fenton. (Cambridge University Press.) Part I., 9s. net.

"The Fundamental Principles of Chemistry." By Wilhelm Ostwald. Translated by H. W. Morse. (Longmans.) 7s. 6d. net.

"Recent Advances in Physical and Inorganic Chemistry." By A. W. Stewart. (Longmans.) 7s. 6d. net.

"The Theory of Valency." By J. N. Friend. (Longmans.) 5s. net.

Contains numerous references to original papers.

"The Interpretation of Radium." By F. Soddy. (Murray.) 6s. net.

"The Periodic Law." By A. E. Garrett. (Kegan Paul.) 5s.

Natural History.

BOTANY.

"Botany for Matriculation." By F. Cavers. (Clive.) 5s. 6d.

An excellent book. Very full, though quite elementary in treatment.

Hayward's "Botanist's Pocket Book." Revised and enlarged by G. C. Druce. (Bell.) 4s. 6d. net.

The thirteenth edition of a flora with an established reputation.

"A First Book of Botany." By Elizabeth Healey. (Macmillan.) 1s. 6d.

Admirably suited to the needs of beginners.

"Essentials of Botany." By J. Y. Bergen. (Ginn.) 5s.

Will take high rank among American school books of botany.

"Field and Woodland Plants." By W. Furneaux. (Longmans.) 6s. net.

For general readers. Is richly illustrated, and would make a capital school prize.

ZOOLOGY.

"Elementary Physiology." By W. B. Drummond. (Edward Arnold.) 2s. 6d.

Specially valuable for the particular attention paid to the peculiarities of childhood.

"Physiology, Practical and Descriptive." Part I. "Descriptive." By B. P. Colton. (Harrap.) 3s. 6d.

Gives prominence to rules of hygiene as inferences from facts of physiology.

"The Scaly-winged." By R. B. Henderson. (Christophers.) 1s. net.

A book on butterflies and moths for beginners.

"The Young Naturalist." By W. P. Westell. (Methuen.) 6s.

A discursive survey of the animal kingdom. The plates alone are worth the price.

GENERAL BIOLOGY.

"The Hedge I Know," "The Pond I Know," "The Wood I Know," "The Meadow I Know," "The Stream I Know," "The Common I Know." By W. P. Westell and H. E. Turner. (Dent.) 8d. each; three books in one volume, 2s. 6d. net.

Each book describes the animals and plants inhabiting the environment. Excellently illustrated.

"The Ruskin Nature Reader." Edited by G. R. Bennett. (Dent.) Senior book, 1s. 9d.; intermediate book, 1s. 6d.

An admirable series of extracts from standard authors, to accompany a course of nature-study.

"An Introduction to the Study of Biology." By J. W. Kirkaldy and I. M. Drummond. (Clarendon Press.) 6s. 6d.

Deals with the organisms prescribed in the syllabus of the Oxford and Cambridge Schools Examinations Board.

"Farm and Field." By W. F. Rankine. (Pitman.) 1s.

A country reader for senior scholars.

THE TEACHING OF ENGLISH IN A TECHNICAL COLLEGE.[1]

THE teacher of English in a scientific school faces in many ways a special problem. In a place where exact sciences are fundamental, he teaches an art which must often appeal to standards of taste. He finds always among his pupils a number who are at the start unsympathetic. Yet his subject is undoubtedly important. Aside from its practical value in training men in bearing and address, English composition may be made the basis of logical cultivation of the thinking powers and the means of awakening in the mind the love of broader scholarship. On these accounts, if those interested in scientific education ask themselves how the time devoted to teaching English

[1] Abridged from an article by Prof. A. T. Robinson published in *Science*, November 12th, 1909.

in scientific courses may best be employed, they are attacking a question by no means unimportant. The present paper undertakes to deal with the broader aspects of the work in English composition as the writer has observed it during the last eight or nine years at the Massachusetts Institute of Technology.

Undergraduate instruction at the Institute of Technology is divided among thirteen prescribed courses of scientific and engineering studies, each of four years' duration. Without attempting to be precise, it may be stated roughly that the first two years are given up to studies which are regarded partly, or even mainly, as a means of general education. These subjects range from mechanical drawing, through elementary physics and chemistry, to history and economics. Some of them, like history, are purely educational; others, like drawing, have a distinct bearing on later professional work, but still are taught in the theoretical spirit, and with the purpose of developing power. To the latter class may be said to belong the subject of English composition. It is intended to furnish a tool for business and professional life; but, at the same time, it should serve to broaden the student's interests, to stimulate his power of observation, and to make him more alive to his inner mental process and better able to control it.

The time devoted to this subject is confined to two terms of fifteen weeks each during the first year of the four-year course. In the first term there are two class-room hours, and two hours of preparation each week. In the second term only half this time is allowed, and the division between class-room hours and preparation is left somewhat to the option of the instructor. When theme work is being assigned it is usual to consider two hours—the preparation period for the week—sufficient for the production of a theme of about three hundred words.

The work has always been treated, by those responsible for its control, with a breadth and liberality which leave all possible scope for individual ingenuity in the teacher and for the adoption of new methods. It is the happy privilege of those who teach English at the institute to regulate their own work in all except its essential policy, and to adapt it, in so far as their various capacities allow, to their own powers and to the needs of the class. It is my purpose to discuss the underlying principles of this teaching in so far as they seem likely to bear on the general problem of engineering education.

Students enter the institute on the basis of a high-school or college preparatory training. They have been reading selected works from the English classics, discussing their style and construction, writing appreciative essays about the characters which occur in them, or perhaps attempting "daily themes" on subjects of a supposedly more personal nature. In lieu of other models, however, we may fairly suppose that the style in this written work has been, consciously or unconsciously, moulded after that of the classics studied. The works prescribed are, I believe, admittedly neither the most absorbing nor the most noble in the language. Of necessity, then, the college requirements in English are in many cases administered by the secondary-school teacher as a medicine, and, in view of the pressure of preparatory work, in maximum doses. As a result of these conditions the engineering student enters the institute with strongly conceived notions about the study of English. He does not, as a rule, come of a "literary" family. In school he has read "literature." Literature, therefore, is, to his mind, like his school reading, either dry, silly, or incomprehensible. By the same token English composition—the making of more literature—is an art in which he sees no practical value.

The teacher who successfully combats this prejudice has accomplished a delicate task in persuasion. He must work toward this end along three lines: he must give the incoherent and undeveloped mind respect for its own productions; he must remove, so far as may be, the embarrassment of his own too critical presence; and, finally, he must attempt to show, as no rules of English composition derived from the study of models of literature ever can show, a rational aim in writing and an easily attainable attitude of mind which will lead to success. This is essentially the problem of teaching English composition at the Institute of Technology.

In attempting to solve this problem, the student is at the outset usually requested to select his own subjects for written work. His attention is directed to the fact that success can come only with topics which he cares about and knows. At the beginning of the first term he hands in a short list of subjects on which he prefers to write. These are tested, in the first instance, only as to the degree of knowledge and personal interest behind them. In a large school like the institute, which draws its students from all parts of the world, and in some cases from men of business and professional experience, the subjects present considerable range and some novelty. There is, first, the immature schoolboy from a neighbouring high school, who has seldom left his native town. He has his favourite sports to tell of—hunting and fishing trips, perhaps an occasional criticism of high-school methods or of institute life. Beside him is the student who has travelled or lived abroad or in distant parts of the United States, and is full of information as to unfamiliar methods of life and work. Finally comes the young man of professional experience, who is ready and glad, if he can find an instructor or a fellow-student well enough informed to follow him, to expound deep matters, like the theory of injectors or fire-proof electric wiring. Common to all these writers, and more promising than other subjects, are those which relate to business methods or manufacturing processes. Of the students I have met in the last five years, only about 2 per cent. failed to respond to this method and declared themselves utterly devoid of ideas; the rest were rather easily supplied with congenial subjects, and started on work which from the beginning they could take seriously.

The subjects are, when possible, neostyle-copied and handed about the class. At all events, it is essential that the students should have access to the list. It remains only to shield the actual product from too high a standard of criticism, and to provide each author, if possible, with sympathetic and intelligent readers. The class at large is no fitting audience. It demands, or seems to demand, too much, and frightens all but the more experienced or callous. Individual critics chosen from among the students give better service. This plan may conveniently be followed if it is possible to neostyle-copy the lists of subjects. In that case each student explains briefly his proposed subjects, their general scope, method of treatment, and point. Those who are interested in a particular subject signify their willingness to read the work; one of them is assigned as a critic, is later consulted by the author, and finally takes the instructor's place in giving a written criticism and correction of the finished theme.

This plan has some large theoretical advantages. It turns the youthful author over to critics of approximately his own age and experience. It relieves the teacher of some drudgery, and spares him the odium of fault-finding. Still, it should not be followed exclusively. One's fellow-students are severe critics, but not usually sympathetic. Some will be misled by the titles, however fully explained, and find, perhaps, that they have more information than the author himself, or that they are not interested in the

subject as he feels competent to treat it. Others will neglect to confer with the critics. This is perhaps the main danger.

A considerable portion of every student's work should unquestionably be read by his fellows, and, in classes sufficiently small for constant supervision, perhaps the whole. Such criticism, if taken seriously, soon removes the impression that the teacher's fault-finding is professional; and it takes composition into the field where it belongs—the field of practical dealing between man and man.

In the past five years I remember many pieces of work that could hardly have interested me more if they had been literary ventures of my own. One man, not so far removed from boyhood as to need a razor, wrote for me on the social life of boys, and it happened that his conclusions, largely illustrated from his own experience, were not unlike my own. I had a long paper on Colorado forest reserves and timber protection from the son of a large timber owner. A boy who had been brought up abroad wrote a series of essays on German school life and customs. The thing which perhaps gave me most enjoyment in watching its growth was a fairly complete account of the Fore River works at Quincy, Mass. The author was engaged on this the better part of a term, partly in interviewing men and collecting material. I watched his work at every step. In the end he read large extracts to the class, and showed the photographs which he had taken. In the public reading—and not until then—it dawned upon him that his style was rough, and, whereas at the opening of the term he had no notion of turning a sentence, he became in the end, without a hitch in the natural development of his mind, his own critic of style. These men were interesting and interested because met on their own ground. I might, if it had seemed expedient, have assigned them subjects in treating which they would have bored both themselves and me to extinction; but, on the other hand, I should dislike excessively to handle many subjects that they, if they had the upper hand, might assign to me.

It is not so hard, then, for the teacher to be sympathetic; but sympathetic he must be at any cost. To secure this end he must, in most cases, criticise orally, not in writing. The complete explanation in writing of even a minor fault will often require enough red ink to discourage the elect; and then, ten to one, the fault is no fault at all, but the result of some text-book principle too narrowly applied. Oral criticism is more expressive, and at the same time more modest. It assumes that all is fundamentally right, ascertains the meaning by questions, conceals that usually large part of the difficulty which arises from the critic's own stupidity, and suggests a way out of the remaining trouble.

In the substance of this criticism as well there is a corresponding tempering of the wind. The criticism of details is for a time kept in the background. The instructor pretends to believe, what no one really believes in these days, that the secondary schools have found time to teach grammar, spelling, and punctuation. Faults in these may be weeded out later, but for the present it is remarkably sound doctrine that to pull out the tares destroys the wheat.

Greater closeness of relation with the instructor, as well as the habit of writing for class-mates, will both tend to bring out clearly the central problem of writing—the adaptation of work to a particular audience. Even when themes are written directly for the instructor, the attempt is usually made, by preliminary conferences with the student, to impress upon him that he is not writing for a general court of appeal, but for an individual mind, with definite prejudices, ascertainable limits of knowledge, and individuality of point of view.

In attempting to teach an engineering student straightforward English prose for business purposes, it is necessary to assume a simple attitude. One says, not "This is bad," but "I dislike it"; not "Your expression lacks force," but "You have not brought your argument home to me, and thus you have failed; for your whole object was to produce an effect on my mind." The student who sees his work treated from this point of view begins to find the problem of writing simplified. Composition for him takes on the look of a practical art, for it is, after all, only one department of the great business for which he is being educated—the business of dealing with men.

The pupil who has been taught to write directly for some class-mate or for his teacher finds himself in a simplified position where he knows definitely what is expected of him, can himself measure the degree of his success or failure, and may keep within a safe distance of the manner and the matter to which his daily life and his conversations with his fellows have accustomed him.

As the term progresses and men get the notion that their writing is to serve some useful end, all sorts of other plans may be tried. They may even be assigned subjects, of a reasonable sort. At some time during the term use is made of exercises bearing on the collection of facts and on observation, to the end that the student may in a degree learn how to observe, or at least to realise, why he has hitherto observed so little. To this end the class perhaps goes with the instructor to look at some relatively simple object, as the façade of a building. The natural subdivisions are first discussed, and the order in which they may best be taken up; then the lines of observation essential to be followed in rendering each of these parts. After perhaps twenty minutes of this work, the men return with their notes to the class-room and write the report. Following this preliminary exercise under the eye of an instructor, more assignments are given out, of details of buildings, and features of natural or artificial interest about Boston, all being subjects on which the instructor has taken careful notes. The lesson of thorough and systematic observation thus begun is enforced by the assignment of subjects of a slightly different nature, from life, models, or photographic enlargements. In all similar assignments for written work, the attempt is made to treat definite subjects, so that the results can be tested at any time, and criticised wholly, by an appeal to facts. Later in the year a more ambitious report is often attempted, involving, not only natural, but logical subdivisions, say on a neighbourhood as a place of residence or on a preparatory school. To help him in gaining what may be called self-consciousness, an articulate recognition of the ideas which are lying unrealised in his mind, he is given a list, as complete as it can be made, of the observations which would be pertinent, for instance, the things necessary to be looked out for in selecting a place of residence. It is usual in this work to leave the determination of the scope and mode of treatment to the student, and the result in most cases is a long, detailed, relatively mature, and often admirably arranged report of from ten to fifteen pages of the ordinary letter-sheet.

These reports, thus constructed, are essentially like the engineering report of later years, and in this connection it is usual, when time permits, to study at least one engineering report, with an analysis of its headings, as showing the divisions of the subject and the sort of observations which the engineer has thought it advisable to make under each head.

The great present needs of such teaching of English composition as I have described are two. The first is closer contact with professional departments. Such contact has already been secured to some extent in the higher years, where professional reports are reviewed by members of the English department. This, however, is likely to resolve itself into a mere correction of faults in the technique of expression. What is needed, rather, is discussion and reports in which from the outset the teacher of engineering and the teacher of English shall co-operate; which shall be both conceived and carried out with the purpose, not only of securing accuracy in details of fact, but also of studying the theories of thought and of expression which underlie such work.

The second need of this teaching is that of teachers. In other subjects teachers—the good ones—are said to be born, not made. The ideal teacher of composition could hardly be born, for the limitations of human nature preclude him. To criticise all thought—the substance of it, from which alone the form depends—to sympathise with every point of view, to win the confidence of every type of mind—these tasks require some genuine magnanimity of soul. No man can fully meet so large a requirement, yet here and there are found persons not ill-adapted on one side or another for the task. Nothing can come amiss—scraps of general information, breadth of interest, the power of drawing out other peoples ideas, above all, warmth of heart. Meanwhile, with whatever equipment, lucky if with a trace of some necessary quality, one does one's best. It is at least something to have conceived the sort of man one ought to be.

STANDARDS OF LIGHTING IN SCHOOLS.[1]

IN England, and in the United States, we have already grown accustomed to describe amounts of illumination of surfaces in terms of a British unit—the "candle-foot"—not perhaps a very happy term—one that we would readily exchange for a better—meaning thereby the intensity of the illumination at a surface situated at the distance of 1 foot from a light of one "candle."

Adopting the candle-foot as the unit of illumination, one may readily state certain facts with definiteness. All competent authorities are agreed that at night, for the purpose of reading, an illumination is required not less than 1 candle-foot, some authorities saying 1½ candle-foot. The facts appear to be that reading is impossible with an illumination of $\frac{1}{10}$ candle-foot, difficult and fatiguing with one of $\frac{1}{5}$ candle-foot, comfortable with from 1½ to 3 or 4 candle-foot, but that if the illumination exceeds 6 or 8 candle-foot the glare of the page is again fatiguing and dazzling. The page should neither be under-illuminated nor over-illuminated. Something depends, it is true, on the size of the print. Under a feeble illumination of, say, ½ candle-foot, a type of pica size, printed in a fount of bold face properly inked, is legible, when one of long-primer size, printed in a weak way, would be practically illegible. Something also depends on the state of the eye as affected by the general illumination of the surroundings. Very seldom does one find in any ordinary room an artificial illumination exceeding 3 candle-foot. By day, on a writing-table placed near a north window—or near any window not receiving direct sunlight—the illumination may exceed 3, and may even attain 4 or 5, candle-foot.

Now that we have a standard of illumination and simple portable instruments that will measure it, there can be no excuse for inaction or ignorance in applying that knowledge to securing proper illumination for public and private buildings.

Let me begin with school buildings. They are the most important, for whatever bad results flow from bad lighting of churches, factories, or railway stations, those which result from the bad illumination of schools are far more to be deplored—they imperil the eyesight of the next generation.

I note that in a recent report by Dr. James Kerr, medical officer for education to the London County Council, in the statistics of the Council schools for the period April 1st to December 31st, 1908, he found the lighting of 81 per cent. of the schools "good," 8 per cent. "fair," and 11 per cent. "bad."

Now the inspection which thus judges the lighting of one school as "good" and another as "bad" is, after all, a mere *ipse dixit* of the inspector. He may be perfectly right: but he gives no facts or figures to support his judgment. Had he said, "I find in such and such a school that the illumination in half the class-rooms is below 1 candle-foot, that in the large hall of the school by day, or an ordinary cloudy day in summer, it is 2 candle-foot near the west end and only ¾ candle-foot on the desks half-way down the side of the hall," one would know what he had to go upon. But has anyone yet seen a report on the illumination of any school that gives any real data whatever?

The ophthalmic surgeons are all agreed that insufficient illumination is a prime cause of myopia, and that the myopia gets aggravated, a larger percentage suffering from it in the higher classes. My brother, Dr. Tatham Thompson, who is consulting ophthalmic surgeon to the Cardiff Infirmary, in a lecture delivered three years ago on the "Influence of Early School Life on Eyesight," gave a summary of the results of various investigations of several authorities—Dr. Cohn, of Breslau, Dr. Risley, of Philadelphia, and Dr. Priestley Smith. It appears that in the years 1865–6 Dr. Cohn examined the eyes of no fewer than 10,060 children in the schools of Breslau, and found 17·1 per cent., or nearly one-fifth of the whole, to have defective sight; and the percentage of those suffering from short sight was only 6·7 per cent. in the elementary schools, but rose to 26 per cent. in the higher grammar schools ("Gymnasia"), while in the university he found no less than 59·52 per cent.—more than half—of the students to be short-sighted.

In 1881 Dr. Risley found in the schools of Philadelphia a progressive percentage, from 4·27 per cent. in schools where the average age was 8½ years, up to 19·3 per cent. in the normal schools where the average age was 17½ years. In Birmingham Dr. Priestley Smith found 5 per cent. of myopic children in the Board Schools and 20 per cent. of the students in a training college.

All ophthalmic surgeons agree that the cause which forces the children into increasing short-sightedness is protracted poring over books under an insufficient illumination. Even in what an inspector might call a well-lit school the illumination at the surface of the desk may be quite insufficient if the desks are badly placed, or the windows insufficiently high, or the lamps badly distributed.

Let us rejoice, however, that the London County Council has made a beginning of reforms, and has in Dr. Kerr secured a medical officer who is alive to the importance of this question. The next step should be to request him to make a systematic numerical measurement, with a simple portable illumination photometer, of the actual conditions existing in the schools. Then the Council will be in a position to instruct its surveyors and architects as to what are the real requirements that ought to be fulfilled

[1] From an address delivered by Prof. Silvanus P. Thompson, F.R.S., on November 18th, 1909, as president of the Illuminating Engineering Society.

in the future. All educational authorities ought henceforth to insist on rational requirements as to lighting. Hitherto they have had nothing definite to specify; now that illumination photometers are available, they ought to require a minimum of 1½ candle-foot at the worst-lighted seat in the schoolroom, and not depend on purely architectural rules about heights of windows or areas of window space. In England the Board of Education in its Building Regulation (1907), Rule 6, clause *c*, has laid down a foolish rule: "Skylights are objectionable. They cannot be approved in schoolrooms or class-rooms." That perfectly monstrous provision ought to be at once repealed. The universal experience of the textile industries, where adequate lighting of spinning and weaving machinery is a prime necessity, is that no method of lighting is so satisfactory as skylights in roofs specially constructed to receive light from the northern sky.

HISTORY AND CURRENT EVENTS.

WHEN the King of Portugal was entertained by our King Edward at Windsor last November, references were made by both Sovereigns to the long alliance between the two countries, which remind us of passages in history, some well known, others mostly forgotten. Some Englishmen, proceeding by sea to take part in the second Crusade in 1147, helped Alfonso, the first King of Portugal, to secure his capital, Lisbon, from the Moors. John of Gaunt, prosecuting his claims to the crown of Castile in 1386–9, married his daughter Philippa to John, King of Portugal, in order to secure an ally; and, as King Manuel remarked, she was the mother, not only of the next Portuguese king, but also of Henry the Navigator, who devoted his life to the exploration of the African coast, an exploration which led, after his death, to the temporary Indian "empire" of Portugal. England shared with the Dutch the task of putting an end to that brilliant but short-lived dominion; but this is the only instance of conflict between these two Atlantic Powers.

IN 1580 Portugal and all its possessions, east and west, fell into the hands of Philip II. of Spain, then England's chief enemy; and, as we all know, Lisbon was the port from which the great Armada first departed in 1588. But in 1640 the Portuguese revolted from the Spanish yoke, and in 1662 an alliance with England was cemented by the marriage of Catherine of Braganza to Charles II. Henceforward the alliance was continuous. How Portugal sided with England in the war of the Spanish Succession, and how the Methuen treaty introduced the Portuguese wines to the English market, are well known to all. Of course, we need not speak of the Peninsular War and how the Duke of Wellington had Portugal for a base from which to conquer Spain from France; and our space is too small to tell of British action in Portugal and Brazil during the first half of the eighteenth century. For this we must refer our readers to the text-books.

THE organisation of the British Empire as a unit, as distinct from the other Governments of the world on one hand, and from the various parts of that Empire on the other, seems to be one of the movements of our time. There are many ties between the various commonwealths, dominions, and dependencies of the Empire—religious, racial, commercial, and others—and the embodiment of these connections in concrete forms is taking various shapes. We have an Imperial Defence Committee; the Churches, both established and free, are more or less definitely organised, or at least connected, on Imperial lines; and the latest proposal is one made at Melbourne recently by a London merchant, that the various chambers of commerce throughout the Empire should form a central council sitting in London, with representatives from each community in proportion to its oversea trade. So, in our conservative way, we are preparing the British Empire of the future—building it up on the institutions of the past.

MEANWHILE, constant efforts are made to educate the people of the British Isles to realise the Empire of which they form a part. Not only are those who have the suffrage exhorted to remember that they are but a part of a much larger whole, but endeavours are made to educate the children in our schools so that the next generation, at least, may understand their heritage. Empire Day has become a May festival, and occasion is taken thereby to instruct pupils in the meaning and history of Greater Britain. To those of us who have at any time had the opportunity of traversing some of the "Seven Seas" it is hard to realise the necessity for this teaching; yet when we hear, as we have recently heard, of the confusion in children's minds between music-halls of the name of Empire and the dominion on which "the sun never sets," we are compelled to believe that, as Sir Robert Lowe said long ago, it is necessary to educate our masters.

ITEMS OF INTEREST

GENERAL.

THE annual meeting of the Conference of Headmasters was held at the Leys School, Cambridge, on December 22nd and 23rd. In connection with the Public Schools' League, the following resolution was adopted: "That this conference welcomes the development of the Public Schools' League for Imperial Land Settlement in the Over-seas Dominions, and recommends to the governing bodies of the schools represented in the conference the establishment of a central office in London for the permanent work of the league." It was also decided that a sub-committee should be appointed to hold further conference with the officials of the Joint Board of Oxford and Cambridge with reference to the examinations for higher, lower, and school certificates. A discussion on the recognition of English in University Entrance Examinations took place, and eventually the following resolution was adopted with a small majority: "That this conference considers that, with regard to the relations of public schools curricula to the Universities of Oxford and Cambridge, fuller recognition of English is desirable in the university examinations for admission." At the second meeting, which is being held as we go to press, the conference is considering the principle laid down in the curriculum report of the committee, that a boy should not be allowed to begin Greek until the foundations of Latin and French have been laid securely and he has received some systematic training in English. A suggestion is to be made that a special meeting of those headmasters who are in favour of the recommendations of the committee be summoned to take steps to give practical effect in their own schools to the proposals made by the committee.

THE annual general meeting of the English Association will be held at University College, Gower Street, London, W.C., on January 14th and 15th. On Friday, after the business meeting, at which Mr. A. H. D. Acland, chairman of committee, will preside, the president, Prof. George Saintsbury, will deliver an address on "Shakespeare and the Grand Style." The members will dine together in the evening, when the headmaster of Eton will reply to the toast of the Association. The next morning the interim report of the joint committee on grammatical terminology will be considered, with special refer-

ence to the teaching of English grammar. The headmaster of Westminster School will preside and open the discussion. Further information can be obtained from the secretary, Miss Elizabeth Lee, 8, Mornington Avenue Mansions, West Kensington, London, W.

THE Geographical Association has again arranged a series of lectures during the Easter term of the year for the benefit of teachers of geography. The first lecture will be held at the London Day Training College, Southampton Row, London, W.C., on January 28th, at 7.45 p.m. A lecture will be delivered by Mr. W. C. F. Anderson, director of education for Berkshire, on "The Best Maps for School Use: Some Practical Notes." The chair will be taken by Dr. A. J. Herbertson, reader in geography in the University of Oxford. Admission is free to members of the association, each of whom may introduce a friend; non-members may obtain tickets, price one shilling each, from the honorary correspondence secretary of the association, Mr. J. F. Unstead, 39, Greenholm Road, Eltham.

THERE is a growing belief that all is not well with the current scheme of education in secondary schools for girls. Many women teachers are beginning to wonder if the needs of the developing girl are so similar to those of her brothers as to justify the great similarity between current curricula in secondary schools for boys and girls. We are glad that Prof. Sadler dealt with this subject at the recent opening of the new buildings of the Barnsley High School for Girls. The educational pioneers, who in the middle of the last century urged the need for secondary schools for girls, seemed to have been so obsessed with the necessity for such higher education that they had no time or energy to bestow on the question as to the complexion this education should take. The consequence was that, having carried their main point, the curriculum of the new schools they succeeded in establishing was copied with little modification from existing public schools for boys. As Prof. Sadler said, the new impulse is towards a more womanly education, more artistic in temper and its choice of subjects, easier in point of intellectual strain, especially during adolescence, less examination-ridden, less academically competitive, more attentive to grace of bearing and to the training of the body, more regardful to skilfulness in home arts, and giving scientific preparation for motherhood and for the privileges of home life.

TWO of the first subjects to be dealt with when the time arrives for reconsidering the scope and character of the curriculum suited to the needs of girls in secondary schools will be mathematics and science. Inspectors and others familiar with the capabilities of girls from thirteen to seventeen years of age know that in our secondary schools there is a type of girl whose mathematical powers are exhausted early in life, who seems to be unable to continue her mathematical studies with any advantage after a certain stage has been reached. Such girls appear to be unable to grasp the requirements of a formal geometrical proof; to them the steps of a rigid algebraic demonstration are meaningless; and it would appear that their time would be more profitably employed in extending their acquaintance with literature or in following a course of simple formal logic than in vainly endeavouring to grasp mathematical concepts that their sisters understand without effort. In the case of science, improvement is necessary, especially in the character of the chemistry syllabuses adopted in girls' schools. To take the new syllabus in this subject of the matriculation examination of the University of London as an example; the authorities, in drawing up this scheme of work, appear to have had in mind chiefly the needs of boys who later in life may take up chemistry in one of its branches as a profession. Yet girls who desire to matriculate are required to take the same syllabus, whereas an equally sound training in the scientific method could be secured from a course of work in which the everyday needs of the kitchen and laundry formed the basis of the scheme. In fact, we hope the time will not be long delayed when the special educational needs of girls will be subjected to scientific examination.

IN a recently published report on observations of American education, Mr. P. Board, Director of Education for New South Wales, institutes an interesting comparison between the provision of secondary education in New South Wales and in parts of Canada and the United States. New South Wales has probably gone further than any other Australian State in its provision of education beyond the primary stage. By its system of superior public schools, it is giving at present two years' instruction beyond what has been recognised as a primary-school standard to 9,000 children. It has, moreover, a system of high schools, five in number, providing a complete secondary-school course to 800 pupils. But the scheme of higher education, so far as it is at present carried, is extremely inadequate. The superior public schools simply continue the work of the primary school for two years for those who remain for that time at school, but the majority who complete the primary-school course at thirteen remain at school only until they reach the age of fourteen, and thus receive less than a year of higher instruction. The difficulty is partly due to economic conditions that lie outside the reach of educational organisation, but it is also partly due to the absence of a sufficient number of fully organised high schools which has led to a comparative disregard of the need for advanced education.

TURNING to Canada, Mr. Board points out that the province of Ontario, with a population only about 25 per cent. greater than New South Wales, and spread over an area only a little less, has 143 public high schools. Forty-two of these are collegiate institutes, that is, they provide a fifth-year course, by means of which the student who has passed through the high school can take his first year of the arts course of Toronto University. New South Wales had last year in its State schools an average attendance of 8,368 pupils receiving instruction beyond the primary standards; Ontario has 23,229. Reduced to a common basis of population, Ontario has just twice as many pupils receiving higher education in every hundred of its population as New South Wales. Mr. Board takes one of the eastern of the United States for the purpose of comparison. In Massachusetts, he says, the number of pupils receiving public high-school instruction is 9·6 per cent. of the total school enrolment; in New South Wales the proportion receiving secondary-school instruction is 5 per cent. On the Pacific coast, again, the comparatively newly settled State of Washington has thirty-four high schools for a population rather less than that of New South Wales. The appreciation of high-school education in the United States and Canada is not confined to the cities. Out of a total of 30,331 pupils enrolled in the high schools of Ontario, 29 per cent. are the children of parents engaged in agricultural pursuits.

THE thirteenth annual conference of the Parents' National Educational Union, held towards the end of November last in Birmingham, led to the discussion of many subjects important to teachers. Though the demands on our space make any detailed accounts of the proceedings impossible,

the excellent address by Sir Oliver Lodge on the training of the child may be commended to the notice of teachers. The speech dealt sympathetically with many of the difficulties which confront the teacher in his work. We can refer to one or two only. The preparation of the child for individual life is, said Sir Oliver Lodge, the main object of education, and its chief aim must be the formation of a personal character and will—the separate individuality of a free being. Control of attention, he said, is the first step to the acquisition of character and the reaping of a destiny. The inquisitiveness of children must be utilised as an opportunity for providing them with information. Every effort must be made to get facts right, and the teacher must take care that he understands them rightly; how great a demand this is, only the man of science understands. The next best thing for the teacher is to confess ignorance, and to offer to try to worry out an answer with the pupil. The discovery that their elders, too, can be ignorant, and that there are ways, especially the way of experiment and first-hand observation, of solving difficulties, can be abundantly wholesome to the child. The best plan is to let the children observe and think, to allow them themselves to try to explain. The effort to explain even the simplest thing is good equally for teacher and pupil. A self-devised incomplete explanation is better than one more elaborate which teachers do not see for themselves.

THE annual meeting of the Geographical Association will be held on January 8th at the London School of Economics, Clare Market, London, W.C. At 11.30 a.m. short papers on practical problems in the teaching of geography will be read. In the afternoon, at 3 p.m., the general meeting will take place, and Captain H. G. Lyons, F.R.S., will deliver a lecture on the Nile Basin.

THIS year the London County Council conference for teachers will be held at the Birkbeck College, Chancery Lane, London, on January 6th to 8th inclusive. There will be two meetings each day, from 11 a.m. to 1 p.m. and 2 p.m. to 4 p.m. The first meeting will deal with the organisation of higher schools, when addresses will be delivered by Dr. H. J. Spenser, headmaster of University College School, on the organisation of a large secondary school, and by Mrs. Millington on the organisation of a central elementary school. The training of engineers is the subject of the second meeting. On the morning of January 7th the teaching of number will be discussed. Mr. Raymont will give an address on the fundamental principles of the teaching of number, Miss Lloyd Evans on the teaching of number in a training college, and Miss R. Solomon on the teaching of number in an elementary school. At the next meeting the teaching of domestic economy will be dealt with by Mr. John Wilson, Mrs. Bertrand Russell, and Miss M. A. Cade. Methods of teaching in schools for the mentally defective will be considered at the morning meeting of January 8th, and during the afternoon of the same day a variety of educational experiments in schools will be described by practical teachers. No charge for admission will be made to the conference, and tickets can be obtained from the chief inspector, at the London County Council Education Offices.

A MEETING was held on November 27th at the Regent Street Polytechnic, London, to consider the desirability of forming a London branch of the Mathematical Association. It was decided unanimously that such a branch should be formed, and a provisional committee was elected to carry out the necessary work. Mr. P. Abbott was elected honorary secretary (*pro tem.*), and any teacher wishing to join the branch should communicate with him at 5, West View, Highgate Hill, London, N. The first meeting of the new branch is to be held on January 29th, when the recent circular of the Board of Education on the teaching of mathematics will be discussed.

THE syllabus in chemistry for the matriculation examination of the University of London has been modified, and the paper for the examination of January, 1911, will be based, for the first time, on the new schedule. The new scheme of work is more in harmony with the experimental method of study now adopted in schools, and the authorities have made it clear that they regard sympathetically what is known as the "research" method of instruction. The facts relating to the chemistry of daily life, which form a conspicuous feature of the current syllabus, have been omitted in the new schedule, and more prominence has been given to an elementary study of the metals. Students in future, too, will be expected to be acquainted with the more obvious phenomena of elecrolysis. On the whole, the new syllabus is an improvement, and forms an excellent introduction to the study of chemistry; it does not, however, meet the needs of girl candidates satisfactorily. In many girls' schools chemistry is studied primarily as an introduction to the methods of science and as a preparation for later life. We look forward to the time when an alternative syllabus for girls will be provided which will be based mainly upon the chemistry of common life and still be scientific in character.

THE December Cambridge Local examinations commenced on December 13th at 222 centres in the United Kingdom and the colonies. Of the colonial centres, six are in Ceylon, eight in India, three in the Straits Settlements, eleven in the West Indies, nine in South Africa, and one each at Belize, Bermuda, Mauritius, Seychelles, and Shanghai; there is also a centre at Buenos Ayres. The total number of candidates (14,991), if compared with the number entered for the examinations of December, 1908, shows a decrease of nearly 700, but if the candidates for the July examinations are included, the entries for 1909 exceed those for 1908 by more than 1,000. If the figures for 1909 are compared with those for 1899, it appears that during the ten years the number of candidates has increased in round numbers from 16,000 to nearly 23,000, the most marked growth being in the Senior examination (from 2,247 to 8,028). The number of junior candidates has increased within the same period from 8,275 to 9,945; the entries for the Preliminary examination, on the other hand, have fallen from 5,501 to 4,758. The total number of candidates at colonial centres has grown in the ten years from 1,259 to 3,463.

THE council of the Child-study Society has for some time, in its efforts to advance our knowledge of child-life, been looking for aid of a scientific character, and recently asked Prof. Karl Pearson, F.R.S., of University College, London, to render assistance. Prof. Pearson has drafted a "Schedule for Studying the Factors Influencing the Social Life of the Child," which he desires to have filled in by heads of families or by teachers intimate with families. The number in the family need not be large, but particulars of father, mother, and at least two children are required. It is more important that the schedule should be filled up for families "of the upper, middle, or professional classes." The schedules are being distributed through the branch secretaries of the Child-study Society in London and in other centres, but it may be difficult in a short time to secure the number requisite to make the subsequent investigation by Prof. Pearson worth while. An appeal is therefore being made to members of learned societies (literary or scientific) and to professional men and women to assist by applying for a copy of the schedule and

to fill in the particulars. In view of the widespread interest now taken by parents in the more scientific treatment of child-life, we trust that a good response will be forthcoming to the appeal. Parents who prefer that the actual names of their family should be withheld can fill up a copy of the schedule on that understanding, supplying their name solely to the secretary, who issues the copy with a key number. Copies can be obtained from the secretary of the Child-study Society, 90, Buckingham Palace Road, London, S.W.

ENGLISH teachers of geography find that their pupils are sometimes faced with an examination question of the following type: "Describe carefully and account for the position of Canterbury, Dublin, Guildford, and Inverness," or "Describe the geographical facts that have helped to determine the importance of (*a*) Birmingham and (*b*) Bristol"! It frequently happens that the answer to such questions implies a power of analysis and a fullness of knowledge beyond the ability of the ordinary pupil; and teachers and examiners might learn much in relation to this form of question from an article—"Specialisation in Industry by Certain Cities, with Particular Reference to Trenton, New Jersey"—which appears in the issue of the *Journal of Geography* for October, 1909, published by the Teachers' College, Columbia University.

THE author says: "Practically all the text-books which mention the concentration of clay-working in Trenton state that it is due to the supply of local clay"; and then proceeds to an analysis in which he determines that there is nothing unique in the location of Trenton as a pottery town in relation to (i) nearness to supplies of raw materials; (ii) nearness to markets; (iii) cost of fuel or power; (iv) labour conditions. He adds that the local clay is mainly of importance in making receptacles in which the actual pottery is later fired, the clay used for pottery coming from Florida or England. In conclusion, the writer states: "Geographical conditions may dictate where a manufacturing industry cannot succeed; geographical conditions may fix the boundaries of the region within which a manufacturing industry may be expected to succeed; geographical conditions may suggest the exact place where a certain industry may advantageously locate. Yet a study of the cities in the United States which specialise in certain lines of manufacture, and a study of the particular case of Trenton, New Jersey, lead me to the belief that the concentration of industries in certain places is not even generally traceable to purely geographical conditions, but that the influences which bring about the concentration are complex, and that one is seldom safe in assuming, without considerable knowledge of the particular case, that the concentration is due to some unique geographical advantage possessed by that place. Geographical influences are always present and always operative, but they work in conjunction with many other influences that can be known only by an examination of the particular case in question." This article was read as a paper before the Association of American Geographers at Baltimore, and the conclusion attained seems of importance for Britain as for America.

THE *Journal of the Association of Teachers in Technical Institutions* (No. 7), published by the St. Bride's Press, Ltd., contains the report of the council for the year 1908–9. In this report attention is directed to the important educational work accomplished during the year. Reference is made to the number of valuable papers read before the several branches of the association; also to the work of the sub-committees appointed to consider (i) the revision of syllabuses of instruction in applied mechanics, electrical engineering, and arts and crafts, and (ii) the preliminary training of technical students. Special papers on "Board of Education Physics," "Some Electrical Notes," "The Optical Lantern and the Microscope," and "Notes on Experiments," are contributed by members of the association.

THE *Training College Record*, which with the issue for October last reaches its third number, appears to us capable of filling a distinct place in English pedagogic literature, and we trust, therefore, that it has come to stay. Its *raison d'être* lies chiefly in the fact that its pages more naturally furnish hospitality to pedagogy of the severely scientific sort than do those of periodicals intended to help the teacher in the pressing task of the hour. In the present issue Dr. Nunn, basing himself upon certain articles by Dr. Spearman, writes of "General Ability as an Educational Datum," and we advise the reader who is a stranger to the mathematical theory of statistics not to be dismayed by the mere look of this really interesting contribution. Prof. Green gives a pleasant account of a short sojourn in Russia, where the cult of brass-instrument "paidology" flourishes to a greater degree than we had suspected. Dr. Slaughter and Mr. John Russell write usefully, but not, as it seems to us, without a touch of unconscious humour, of "Eugenics and the School"; whilst Mr. A. A. Cock describes an interesting experiment in the correlation of thought, poetry, and music. Space prevents us from mentioning other excellent features of this promising venture.

SCOTTISH.

THE autumn meeting of the Classical Association of Scotland was held this year in Glasgow University. Prof. Harrower, the president, stated that, as instructed by the last meeting, he had had an interview with Dr. Struthers in regard to the intermediate certificate regulations and their cramping influence on classical study. In particular, he was asked to endeavour to secure the abolition of the age limit for presentation, and to get drawing and science made optional in the third year. He found Dr. Struthers exceedingly sympathetic and genuinely anxious to remove impediments to the study of Greek. He indicated his willingness to meet the wishes of the association on the question of the age limit, and expressed the opinion that it might be possible later to make drawing optional in the third year, but he thought there was no likelihood of any concession being made in the case of science. Prof. Harrower suggested to the members that, while thanking the Department for going some way to meet their views, they should continue to press their case, and show more fully and precisely how the study of Greek was embarrassed by the existing regulations.

INTIMATION has just been made by the Education Department that applications for the examinations in drawing and science of pupils in secondary schools are now being considered. For the lower certificate the conditions are the same as in previous years. In regard to the higher, it is indicated that a pass need be expected only by pupils who have a special liking or aptitude for the subjects and are prepared to devote considerable attention to them during the post-intermediate course. Meanwhile, at least, there is no intention to lay down a minimum amount of time for the study of those subjects, but it is expected that in this respect they will be put on the level of, say, mathematics and languages. In drawing, it is suggested that two main courses might be offered for the selection of pupils, one embracing drawing, painting, and

modelling, and the other drawing and painting with the study of design and applied art. Similarly, in regard to science, an intensive study of one subject or of a closely related group of subjects will be required. Applications for presentation at the examination of 1910 should be made on or before January 4th.

AT a meeting of the Educational Institute (Glasgow Branch) Prof. J. Arthur Thomson, Aberdeen, gave a delightful paper on "Shortening the Latent Period, or the Cultivation of Alertness." He defined the latent period in the operations of the intellect as the period which intervened between the stimulus to thought and speech and the response to that stimulus. The conditions of everyday life required that the response should follow the stimulus with the least possible loss of time. Success was always, but now more than ever, to the ready and alert. He thought that all teachers would admit that the latent period was too great in the case of most pupils. For this he blamed the smothering and clogging of the mind by too many subjects, and the unstimulating and unreal character of much that was taught. For remedy Prof. Thomson suggested a reduction in the number of subjects and the giving of more *Realien* in those retained. He advocated the greater use of the American practice of recitation and of the German *Seminar* system. Another remedy he suggested was to train the mind in visualising. The practice of forming mental pictures was one of the most effective ways of developing alertness. Prof. Thomson kept the large audience hanging on his words from beginning to end; and the general feeling, as expressed in the after discussion, was that it was one of the most stimulating of addresses.

AT a meeting in Edinburgh of the Secondary Education Association (Eastern Branch) the question of the preliminary training of young teachers came up for discussion. Mr. Alex. Hutchison, Boroughmin Secondary School, in introducing the subject, said that the present junior student curriculum was too broad-breasted. It aimed at simultaneous advance in too many subjects. To secure satisfactory results and to put the scheme of training on a sound educational basis, the subjects of the curriculum should not exceed six in number. He would further be prepared to offer the widest possible options as to what these subjects should be. Had these remarks by Mr. Hutchison been made a year ago they would have seemed most appropriate and timely, but made at this stage they are a day behind the fair. The new regulations for the training of teachers, issued more than six months ago, give the most ample freedom in the drawing up of curricula. The only subject laid down as indispensable is English. With regard to all the others, teachers are at liberty to draw up courses to suit the varying capacities and needs of their students. It is true that most of the subjects of the old intermediate course have to be kept up to a limited extent, but in regard to the subjects of intensive study there is no prescription save the one indicated above.

MR. JOHN B. CLARK, George Heriot's School, in an address to the same meeting of secondary-school teachers, took as his subject "The University Preliminary Examination." The new university ordinances had so altered the character of the arts curriculum that a readjustment of the preliminary examination had become imperative. Further, the remodelling of the post-intermediate course of secondary schools rendered such readjustment imperative from the schools' point of view. In future, leaving certificates are to be awarded for the successful completion of courses in any of several groups of subjects; and Mr. Clark contended that every form of school leaving certificate should qualify for entrance upon a university course.

IRISH.

DURING last term Prof. Culverwell, professor of education in Trinity College, delivered a course of six university lectures open to the public. The lectures dealt with the discovery and growth of the rational element in thought. This element was due originally to the creation of a special type of brain produced on a narrow strip of coast and island of Asia Minor stretching for thirty miles southwards from Ephesus, and owed its origin to the fusion of Ionian Greeks with Carians. From this came the first discovery and early foundation of science and philosophy. When these were lost came the dark ages. They were not rediscovered; but a first renaissance came when Irish monks and their converts, the monks in the north of England, brought them back to Europe; a second renaissance was due to their return from Syria to Spain through the Moorish conquests, and the great renaissance when the Turkish conquests dispersed the Greek libraries of Constantinople throughout Europe. The rational element was traced by Prof. Culverwell in the growth of the science of language and in the growth of elementary mathematics; and in his last two lectures he dealt with the origins in child-study, dwelling on the humane methods of Jewish education and on Quintilian as the forerunner of Froebel, and with the origins of universities.

THE board and council of Trinity College have issued a statement of conditions on which Royal University students and graduates may be admitted to Dublin University. These conditions apply at present only to arts students, and not to professional students, whose case will be dealt with subsequently. Matriculated students of the Royal may enter Trinity as junior freshmen; students who have passed the first arts in the Royal will be granted one junior freshman examination; those who have passed the second arts in the Royal will be admitted as junior sophisters; and graduates of the Royal will be placed in the same position as those who have passed the second arts. These privileges will not be granted to students who have passed these examinations in the Royal later than 1906.

THE Senate of the National University has issued the following regulations. For the year 1910 the first university examination is not to be obligatory on students of medicine, engineering, or music, and all the courses for the degrees of the Royal University, including those for matriculation, are adopted by the National University for 1910 in the form in which they would have existed if the Royal had continued, but that the practical examination in mathematical honours, second university examination in arts, be discontinued; this, however, does not apply to scholarships, fellowships, studentships, entrance exhibitions, &c. The Senate also decided to continue the practice which existed in the Royal of admitting to matriculation without further examination candidates who had passed the senior grade intermediate examinations in the required subjects.

THE Classical Association of Ireland has arranged with the college classical societies of Trinity College, the Queen's University, Belfast, and of University College, Dublin, in the National University, each to throw open one of its meetings every year to its members. The first of these meetings was held in Trinity College in

November, when Dr. L. C. Purser delivered a lecture on "Greek Romances of Travel," Dr. Tyrrell presiding, and there was a large audience. The next was held in the Queen's University, Belfast, early in December, when Prof. Henry gave an address on "A Chapter in Greek Medicine," the chair being taken by Sir S. Dill. It is expected that the meeting in University College will be held in the Lent term.

The Central Association of Irish Schoolmistresses has forwarded a memorial to the Intermediate Education Board dealing with four points. The first is the unduly severe marking of the honours French paper in the middle grade last summer. Last year 50 per cent. of the girls taking the honour paper failed, while in the previous year the number was only 20 per cent. The second point urged is that in French too much stress is laid on minute grammatical details, and that the student's general knowledge is not tested, nor are the newest and most approved methods of teaching encouraged. Thirdly, in order that classical education may derive the greatest possible benefit from inspection, a uniform standard of pronunciation of Latin is urged on the Board, preferably the restored pronunciation. Lastly, the middle-grade geography and senior-grade history courses seem too long for a single year's work.

WELSH.

In accordance with the maxim that the newest universities are the most conservative, the students of the University of Wales at the recent degree ceremony at Cardiff made the usual display of humour of all kinds, good, bad, and indifferent. In addition, their uproar was boisterous, and they further indulged in the unnecessary throwing of pease-meal, and even the letting off of a few squibs near to dignitaries. There seems to be nothing extreme in the suggestion that students should be expected to behave themselves at least as decently as those people who have not had the opportunity for intellectual studies. The council of the University College of Cardiff has taken stringent steps to mark its disapproval. The college will withhold £20 from this year's grant to the Students' Representative Council. Students will be refused the use of college rooms for social meetings, smoking concerts, debating societies, &c. A reward of £5 is offered for the detection of the person who wilfully splashed ink on a wall of one of the rooms. There is the usual talk of "harmless fun," but it is needless to say that this does not proceed from those who received flour in their eyes or those who narrowly escaped injury from discharged squibs.

The Court of the University of Wales has considered a scheme for legal education in Wales. A scheme promoted by solicitors from all parts of Wales proposed a joint board of the University with the Law Society to arrange for the legal education of articled clerks and for university education in law, which should make recommendations to the Council of the Law Society and to the University of Wales with reference to matters of legal education, and be empowered to apply such grants as might be made by the Law Society. The Board was to consist of three members of the Law Society, nine elected by the University of Wales, and twelve to represent the local Incorporated Law Societies of Wales, together with the co-optation of four solicitors, who should not be members of the local societies. The scheme was referred to the constituent colleges for their views on the matter.

The governors of the Blaenau Festiniog Intermediate School some time ago granted the use of their school for a dancing class. Protests have been raised from "the different Free Churches and quarry eating-houses." The Festiniog Town Council also sent a protest, on which the governors took no action. A month having elapsed, the Town Council has now passed a resolution to ask the Governors to reconsider their decision. It was stated that after the first discussion by the Town Council the numbers of the dancing class had become three times as large.

Mr. Prichard Jones, of London, has, through Mr. Lloyd George, the Chancellor of the Exchequer, notified his desire to increase a subscription of £3,000, which he had already given, to a total sum of £15,000, to the new University College of North Wales, Bangor, to provide a great hall for the new building, on the sole condition that it shall bear his name. The Drapers' Company has already given £15,000 for a library and museum. To his own native village of Newborough, in Anglesey, Mr. Prichard Jones has presented an institute and almshouses to the value of £20,000. It is fortunate that in a country like Wales, where (except in the southern portion) there are comparatively few wealthy people, Welshmen who have proved fortunate elsewhere should thus come forward and help the colleges and schools.

A discussion arose at a recent meeting of the Swansea Education Committee with regard to the results of the entrance examination of children from the council schools to the intermediate schools. It seems that the percentage of successes from two of the council schools is very high, and it was urged that this must be through some "cramming" process. It was accordingly proposed that "in cases where it was known that pupils had been coached the scholarships should be withheld." This motion, however, was not carried, but it was suggested that it would be wise to do away with examinations and to judge from the general work of the year. Eventually the superintendent of education was asked to prepare a report on the best means of choosing the best scholars for the higher schools.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Bell's First German Reader. By L. B. T. Chaffey. xxxi + 89 pp. (Bell.) 2s.—A summary of grammar occupies the first twenty-three pages. It is generally trustworthy; but Mr. Chaffey should not have suggested that certain prepositions take the dative and accusative according as rest or motion is implied, for this statement gives rise to many mistakes. On p. xx *Wer nicht wagt, gewinnt nicht* should have been given (instead of . . . *nicht gewinnt*), and *klingt* should not have a capital; *zerissen* on p. xxii is also a misprint. Part I. of the reader proper consists of anecdotes, some of hoary antiquity. Part II. deals with Frankfurt, Heidelberg, Strassburg, and various parts of Switzerland in the form of a narrative, to which (for no obvious reason) an appendix on duelling has been added. Part III. consists of a dozen poems of varying value and difficulty. A section of "grammatical questions" suggests how such questions can be based on the text; and a number of German questions on the text of Part I. are also given, together with some grammatical exercises and "themes" (*i.e.*, short passages for retranslation). For Part II. there are "themes" only. The German-English vocabulary appears to be almost complete; it does not, however, contain the words in the poems, and for this there is no good reason. The proofs have, unfortunately, not been read with sufficient care; a few of

the misprints may be noted here: *geschwören*, p. 1; *ostmals*, p. 13; *Eontrast, Eenis*, p. 24; *wit*, p. 30; *Ehore*, p. 32; *Äpsel*, p. 53.

Brief German Grammar. By R. J. Ham and A. N. Leonard. viii+241 pp. (Ginn.) 4*s*.—This grammar is quite on the old lines; nor is this to be wondered at, considering how long it is taking the reform movement to make itself felt in the United States. The section on pronunciation is quite unsatisfactory; the authors evidently have no thorough knowledge of phonetics. What is the good of telling a pupil: "Guttural *ch* may be sounded by prolonging the *k* in *ark*, but without any initial explosion and without using the vocal cords"? What are our English pupils, in particular, to gather from the statement that *ŏ* is equivalent to "*o* in *colt*, as pronounced in New England"? We pronounce no short *o* in this word. The grammar maintains the time-honoured arrangement of rules, German-English sentences, English-German sentences, and vocabulary; it is true that in most books of this kind the vocabulary is prefixed to the sentences, but that is no essential difference. That the sentences are of the usual type will be gathered from a few examples: "The father and mother love the scholars. These girls were reading in the uncles' room. Der Bruder dieses Knaben wird den König, wenn er heute hier gewesen ist, gesehen haben. My young brother says that he will have written to his teacher, if he has had the time." We have enough books of this kind without importing them from abroad.

Der Weg zum Glück, zwei Erzählungen für die Jugend. Edited by W. Bernhardt. viii+177 pp. (Heath.) 1*s*. 6*d*.—"Der Weg zum Glück" is the not very suitable title given to the two stories "Der Rügenfahrer," by Viktor Blüthgen, and "Tot oder lebendig?" by Julius Lohmeyer. They are both suitable for the third year of instruction, and calculated to interest our pupils. Dr. Bernhardt is a veteran editor, and this edition does not fall below his usual standard. The love of long words which characterises the American is exemplified more than once—*e.g.*, "The intercommunication-system of our passenger-cars, postpositive participle, pastry-creation, periphrastic comparison, the national capital of the German Empire." The vocabulary appears to be complete. There is a careless blunder on the title-page which has been printed for the English edition (*Clück* for *Glück*).

H. Sudermann, Johannes. Edited by F. G. G. Schmidt. x+126 pp. (Heath.) 2*s*. 6*d*.—This edition of Sudermann's play on St. John the Baptist is a careful piece of work. The introduction and the notes both deserve commendation. "Johannes" is a play of much interest to the mature student, but it is hardly suitable for the class-room.

Classics.

Livy, Book IX. Edited, with Introduction, Notes, &c., by W. B. Anderson. xxiv+276 pp. (Cambridge University Press.) 2*s*. 6*d*.—The text is that of Stephenson, already published in the Pitt Press Series, with a few alterations: the edition, like most of that series, is rather suited to the university man than the schoolboy. It is very full and very thorough; the editor has clearly spent much labour on it; and there is an admirable index of Latinity, which will be useful to those who read other books of Livy. Even these notes, good as they generally are, are not free from the milk for babes which curdles so easily: see, *e.g.*, that on *expiationem spretam*, p. 75, which must be a familiar idiom to anyone who could understand other notes, such as that on *ferret*, p. 79; and see also *cursu*, "instrumental ablative," p. 129. We are surprised that Mr. Anderson does not quote from Plautus for *fuerat=erat* (p. 75), where it is common enough; and it is also found in Cicero and Propertius. Mr. Anderson takes independent views in several passages, of which the most noteworthy are found in Appendixes II. and III. In the former he urges with much plausibility that ch. 17–19 were a rhetorical exercise done in Livy's youth, and later put into the history. The first appendix is a careful and critical examination of the story of the Caudine Forks. Mr. Anderson's book deserves the consideration of scholars.

Livy, Book IX., 1–19. By W. J. Woodhouse. 1–42, 79–156 pp. (Clive.) 1*s*. 6*d*.—This book is set for the Northern Matriculation. It appears to be a reprint of part of the complete edition of Livy, IX. It has the characteristics of its series, with the addition of a vocabulary at the end, in which certain words, on what principle chosen we are not told, are explained in order of occurrence.

Cicero, Select Letters. By T. Nicklin. lx+162 pp.; illustrated. (Blackwood: Classical Texts.) 2*s*. 6*d*.—The long introduction to this book is written with taste and knowledge. It is chiefly concerned with the circumstances of Cicero's life, which are a setting to the letters; these it narrates clearly and in an engaging manner. The selection—well, it is impossible to make a dull selection from Cicero's letters; even Watson failed to do that, and he did his best. The notes explain all difficulties, for which we thank them: there are many difficulties in Cicero's letters; but, speaking from the schoolmaster's point of view, there are far too many tags of translation. Examples are: *vicit opinionem*, "surpassed my expectations"; *scilicet*, "of course"; *ineptias*, "folly"; *auctoritate*, "influence"; *iam*, "soon"! If the introduction, which is excellent, were published as a pamphlet, and used with a plain text of the letters, better results would be got than can be got by all this miscellaneous and rather capricious help. The pictures are good.

Caesar's Expeditions to Britain: De Bello Gallico, IV., 20–26; V., 1–23. By W. H. Edward. xiv+104 pp.; illustrated. (Longmans.) 1*s*. 6*d*.—This book is meant for the boy who has gone through the Latin grammar—*i.e.*, after some two years of the study; it is provided with notes which have the advantage of being compiled on a definite principle. But as a matter of fact, the notes appear to reproduce just what the teacher would say in explanation of the text. If, therefore, the learner has a competent teacher, these notes will be useless. It is a teacher's book, which will help him in preparing his lessons. Much the same may be said of the list of "idiomatic phrases" at the end, in which some half-dozen phrases of Latin in each exercise are rendered into English. The pictures of Roman soldiers, camp, &c., are good.

English.

(1) *The English Parnassus: an Anthology of Longer Poems.* By W. Macneile Dixon and H. J. C. Grierson. xvi+767 pp. (Clarendon Press.) 4*s*. 6*d*. net.

(2) *English Literature: its History and its Significance for the Life of the English-speaking World.* By W. J. Long. xv+582 pp. (Ginn.) 5*s*. net.

(3) *Selections from Wordsworth: an Introduction to Romance in Literature.* By Adam Fox. xii+216 pp. (Rivers.) 2*s*. net.

(4) *Shakespeare's Richard II., Julius Caesar, and Macbeth.* Edited, with Introduction and Notes, by G. S. Gordon. xxviii+260 pp. (Clarendon Press.) 3*s*.

(5) *Handbook to Dante's Works.* By F. J. Snell. viii+378 pp. (Bell.) 6*s*.

"The English Parnassus" (1) is a highly interesting anthology of "poems neither epical in scope nor yet wholly

lyrical in quality, which have attained a high measure of critical approbation." The sub-title, "An Anthology of Longer Poems," provokes comparison with Prof. Hales's "Longer English Poems," a school book which for thirty years has been something more than a school book to many of its readers. The new anthology is not a school book: if schools had been kept in view it would have been better to exclude Marlowe's "Hero and Leander" altogether and not merely in part. But Prof. Hales's upward and downward limit of length was much stricter. Messrs. Dixon and Grierson give us an eighteen-line poem of Herrick, and, on the other hand, the whole of Cantos III. and IV. of "Childe Harold" and all "In Memoriam." Everything in the book is good, and there is much that is not familiar to the average reader—Donne's "Second Anniversary," for instance, or Burns's "Epistle to James Smith." The notes (forty pages) are a triumph of condensed and suggestive literary criticism.

Dr. W. J. Long's "English Literature" (2) is one of the best single-volume histories of the subject yet written. The manner is clear and interesting, the choice of works and authors judicious; the quotations, rightly kept within narrow limits, are admirably chosen; and the generalisations are luminous. The fault of most text-books, that we are not allowed to see the wood for the trees, is entirely avoided. Finally, there are some pleasant illustrations, a good apparatus of questions, lists of selections for reading, and a bibliography.

Mr. Fox's "Selections from Wordsworth" (3) are intended, "first, for those who are beginning to study poetry in general and Wordsworth in particular; secondly, for those who have already addressed themselves to Wordsworth's poems and have been unable to care for them." There is a thoughtful introductory essay of fifty-four pages which would be helpful to members of the two classes mentioned if they could be persuaded to read it. The choice of poems is excellent.

In the new Oxford edition of three famous plays (4), the clear black type of text and notes and the strong binding mark a great advance on the old Clarendon Press editions of Shakespeare. The notes are good and terse, and represent the irreducible minimum necessary for intelligent reading. The introductions are too cryptic in style. The average boy, even the average sixth-form boy, would probably be baffled by: "We may look long before we find in the conciseness and severe economy of 'Julius Caesar' an excuse for the critic's suggestion that it is an abridgment of the real Shakespearean play made by Ben Jonson."

The discursive style of the lecture-room clings to Mr. Snell's "Dante Handbook" (5), which is lacking in compression and also in inspiration and proportion. Only eighty pages are given to the "Divina Commedia." The unacknowledged use made of Dr. Paget Toynbee's labours is a still more serious fault.

History.

A Constitutional History of England. By A. M. Chambers. xix+355 pp. (Methuen.) 6*s.*—To those who have kept in touch with the changes in the treatment of our constitutional history during the last twenty years this is an interesting book. It is, so far as we know, the first manual on the subject which, breaking away from the old Whig traditions, and embodying as well the theories which have modified even some of Dr. Stubbs' conclusions, sets forth the story of the constitution on quite modern lines. Perhaps it is the temptation to enlarge on the new matter that makes the treatment of the various parts apparently out of proportion. More than a fifth of the whole book is devoted to the earliest constitution and to feudal organisation, while fully another sixth is given to a chapter on the administration of justice. Much of these chapters will be found difficult reading, and in parts the difficulty seems to arise from want of fuller explanation or from a certain amount of inconsistency. But the earnest student will be thankful for this digest of many recent books, and, what is more valuable, of recent utterances which have not yet been printed in books. The treatment is topical. Only in the last chapter is there a review of the story as a whole. Beginning with a statement of the various views on the origin of the constitution, the author proceeds in successive chapters to describe the Saxon Constitution, feudal organisation, the king, the king's council, and the king's revenue. Only then does she proceed to the "making of Parliament," the House of Lords, the House of Commons, and the "work of Parliament." The book ends with a chapter on the administration of justice and a general sketch of the whole story under the title of "The Change in the Balance of Powers with the Growth of the Constitution." The use of commas is sometimes misleading; there are two or three misprints and, as we have said, some apparent inconsistencies. Ecclesiastical matters—the Reformation of Henry VIII. and of the sixteenth century—are all but ignored, and though the authorities are named there is no bibliography and there are no references to the books. With these exceptions, we know no book which provides so thoroughly up-to-date and so well written an introduction to the subject.

The Fall of the Old Order. By I. L. Plunket. iv+248 pp. (Clarendon Press.) 4*s.* 6*d.*—This is a "text-book of European History, 1763–1815," divided into books and chapters, and provided with a chronological summary, eight genealogies, an index, three plans, and seven maps, as well as bibliographies. The usual story is told well and exactly, except for a curious mistake of date as to the end of the Holy Roman Empire. The author expressly states that "Francis II. discarded the now empty title" in December, 1804, at the same time as he assumed the new title of "Emperor of Austria." The result is a confusion in the list of sovereigns on p. 151, and the use of the title "Francis II." for the Emperor of Austria throughout the book.

The Story of Hampshire. By T. Varley. viii+207 pp. (Black.) 1*s.* 6*d.*—"The history of Hampshire may be conveniently divided into three main sections: (*a*) The era of predominance, terminating with Stephen's reign. . . . (*b*) The era of declining participation, terminating in James II.'s reign. . . . (*c*) The era of provincialism. . . . It is the first two sections which are dealt with . . . as a continuous narrative. Later events, as being more frequently local, have been dealt with in connection with such detailed local treatment as considerations of space have rendered possible." This extract from the preface adequately explains the book—the advantages and disadvantages of Hampshire history as illustrating the history of the country. Mr. Varley begins with the Celts and ends with James II. Then follow chapters on architecture and local government in Hampshire, and a series of "local and personal notes"—*i.e.*, on the buildings of Winchester and other places—and short biographies. There is a sketch-map, as well as pictorial illustrations, coloured and other, and a brief index.

Chambers's Student's History of England. Edited by D. Patrick and W. Woodburn. xvi+756 pp. (Chambers.)

4s. 6d.—This book may best be described as a manual. It gives in successive chapters and sections the events of English history from the earliest times to the present day. The events are not always chronological in order, but each reign is treated under topics, and the division leads sometimes to repetition and sometimes to divorce of the various parts of the story which really belong together. Each chapter is followed by a summary of the same and by various notes, in which are often embodied some of the more important events, especially of the constitutional history. There is also a brief "glossary" to each chapter, as well as "questions" and brief biographies, and there is an index to the whole book. The history is generally correct and up-to-date, except in the presentation of Puritanism in the sixteenth and seventeenth centuries both in England and America.

Highroads of History. Book IV. (*a*). 256 pp. (Nelson.) 1s. 6d. *Highroads of History.* Book V. (*a*). 304 pp. (Nelson.) 1s. 8d.—These two books together tell of events from the earliest times to the present day, the year 1603 being chosen as the dividing point. They are similar to others of the same series which we have noticed from time to time. The main features are coloured and other representations of famous historical pictures, and a pleasantly written text based on these and on imaginary visits to places of interest.

Notes on British History. By W. Edwards. viii+212 (429–640) + 8 (xvii–xxiv) pp. (Rivingtons.) 2s. net.—This is the third part of Mr. Edwards's book, the first two parts of which we noticed in the issue of THE SCHOOL WORLD for October, 1909. It maintains the good and useful character of its predecessors, and carries on the story until the year 1783.

Junior British History Notes. By W. Edwards. Part I., till 1485, ix+148 pp. Part II., viii+106 (149–254) pp. (Rivingtons.) 1s. net each.—On the same lines as the author's larger work, only on a smaller scale.

Geography.

Philips' Primary Atlas of the British Empire and *Johnston's Edinburgh School Atlas* are two cheap, but good, publications which have just made their bow to the junior and middle forms of schools. The "Primary Atlas" gives seventy-two coloured maps and diagrams—all for 1s.—"specially prepared under the direction of the League of the Empire for the use of schools throughout the Empire." Naturally, therefore, it is got up in Imperial fashion, with a cover of British scarlet (1s. extra if you order it in buckram) garnished with a framework of the royal and colonial arms interlaced with festoons of roses, thistles, and shamrocks. But if a teacher, feeling the garishness of this outer appeal, is inclined to be sceptical as to the value of the inner contents, he will be, we are glad to assure him, agreeably disappointed. After some introductory plates dealing generally with highways and history come the main maps of the book. These are drawn on a uniform plan. A physical map of the country, in brown and green, and very clear, is flanked by smaller maps of its climate, vegetation, and population. Boundary lines are shown in red, and to preserve the scale an inset of England and Wales is inserted. The whole thing is well done, and the smaller maps are very suggestive. The pity of it is there is no index of names at the end. Nevertheless, it is a wonderful shillingsworth.

The Edinburgh School Atlas (1s.) we do not like so well. True, there are thirty-two *full-page* maps with letterpress on the form of the earth, scales, map projections and statistics; there is an index of 6,000 names!—vastly more, of course, than there are in the maps themselves; and there are prominently, and correctly, displayed for each country the orthodox orographical features contoured in brown, with political boundaries superimposed in red. But, notwithstanding the publishers' note that only the most important names have been inserted, there are too many of them, and clearness is sacrificed accordingly. As the mountains are hachured in dark brown as well as tinted, the resulting indistinctness becomes in places almost confusion. The British Isles themselves are the worst sufferers; but, with three possible exceptions—the Congo Basin, New Zealand, and West Australia—none are as distinct for class-teaching as we should like to see.

The British Isles. Selected by Lettice Jowitt. Edited by A. J. Herbertson. xix+286 pp. (Black.) 2s. 6d.

The Elementary Geography. Vol. iv. Asia. By F. D. Herbertson. 128 pp. (Clarendon Press.) 1s. 6d.

These two books of geography, each edited by Dr. Herbertson, indicate clearly the improvement which has taken place in geographical instruction in recent years. Though the first of the volumes is in no sense a text-book of the geography of the British Isles, it will serve a very useful purpose as an accessory to the ordinary lessons in senior classes. With its aid the student will be in a position to appeal to original sources for a justification of the statements made by his teacher as to the geographical characteristics of the homeland. The selections which Miss Jowitt has brought together from very diverse sources will bring home to the student the large part which geography takes in the literature of his country.

In the second book Mrs. Herbertson continues her successful endeavour to make the broad facts of the geography of the world clear to young boys and girls. We cordially invite the attention of teachers of geography to both of these volumes.

Mathematics.

Exercise Papers in Elementary Algebra. By E. M. Radford. viii+112 pp. (Dent.) 2s.; Answers, 6d. extra.

Problem Papers in Mathematics. By R. C. Fawdry. viii+240 pp. (Macmillan.) 4s. 6d.

Mr. Radford's collection of papers is intended for the use of students preparing for University Local or Matriculation examinations. It includes examples on the elements of algebra up to the exponential and logarithmic expansions. The last forty of the hundred papers are of a somewhat harder character than the preceding ones, and will be found useful by those who are beginning to read for scholarships. The majority of the questions are original; they are on thoroughly modern lines, and we cordially commend the book to the attention of teachers who wish to supplement the examples of the ordinary text-books by weekly revision papers.

Mr. Fawdry's collection is of wider scope, and designed for a somewhat different class of students. He has had primarily in view the requirements of those preparing for Army examinations or working in technical colleges. The papers are divided into four groups. Series A includes easy questions on arithmetic, algebra, geometry, and trigonometry. In Series B arithmetic is dropped, and questions on mechanics added. Series C contains questions on mechanics, co-ordinate geometry, conics, and calculus, and finally there are sets of revision papers. The book supplies a distinct want, and will be welcomed by a large number of teachers who have experienced difficulty in obtaining questions framed in accordance with the new spirit which has entered mathematical teaching.

A Text-book of Differential Calculus. By Ganesh Prasad. xii + 161 pp. (Longmans.) 5s.—This book, by the professor of mathematics at Benares, is a very satisfactory introduction to the differential calculus. The author acknowledges his indebtedness to the works of some of the more recent Continental writers, especially to the admirable little treatise by Pascal; but he has succeeded in a way entirely his own in combining brevity and lucidity in his presentation of the subject. The first chapter discusses definitions from the modern rigorous point of view, and this chapter, together with some of the later ones, probably will be found rather formidable by the beginner. After considering the standard forms and fundamental operations, the author at once passes on to the usual applications to the geometry of plane curves. Chapters on Taylor's theorem, maxima and minima and indeterminate forms conclude the book. The examples are not very numerous, but sufficient for an ordinary course.

The Elementary Principles of Graphic Statics. By Edward Hardy. Second edition, revised and enlarged. 206 pp. (Batsford.) 3s. net.—The original edition of this work has been enlarged by the addition of sections relating to the action of oblique thrusts, including wind pressure upon roofs. The exposition of the usual method of treating such problems is as clear as could be desired, but, as the author points out, this method depends upon assumptions which in many cases are incorrect. We have no doubt that the book will continue to find favour, and that deservedly, with the class of technical students for whom it is designed.

A New Algebra. By S. Barnard and J. M. Child. Parts I.–IV. x + 534 pp. (Macmillan.) 4s.—This is a noteworthy book. The authors state that it has been their aim to provide a school algebra containing a logical development of the subject in accordance with modern views, and at the same time practically useful for school purposes. It is evident that much thought and labour have been expended upon its production, and the result is a work which stands distinctly apart from, and in many respects in advance of, the text-books in current use. The complete work is to consist of five parts, of which four in the volume before us contain the elements of the subject up to the progressions. The writers have been influenced by modern investigations regarding the nature of number, and it is the extension of the idea of number from positive integral to negative, fractional, and irrational quantities which marks the divisions of the book. Part I. deals solely with natural numbers, and within their domain develops the laws and operations of algebra as generalisations of those of arithmetic. The extent of the departure from the usual order may be judged by the introduction of the idea of sequence with arithmetical progression as a particular example into the second chapter, which deals with addition. The real difficulties of exposition begin with the introduction of negative numbers, and on the whole the writers seem to have been very successful in overcoming them. The validity of the laws of algebra in the realm of irrationals is not formally demonstrated, but is justified by showing that rational numbers subject to these laws can be found differing from irrationals by less than any assigned quantity. There is no doubt that the mode of development followed presents considerable difficulties to beginners. Boys bring from arithmetic the idea of number as associated with measurement, and this idea is here subordinated to that of order; actual experience can alone show whether this is a real stumbling-block. The book is in every respect excellent, and we commend it unreservedly to the consideration of teachers.

Science and Technology.

A Course in Inorganic Chemistry for Colleges. By L. C. Newell. xii + 594 pp. (Heath.) 6s.—Intended primarily for college students, this book includes the topics usually taken in a first-year course. Although it makes no special claim to originality of treatment, it deserves praise both for what it omits and for what it includes. No attempt is made to deal with the rarer elements or with less important compounds of common elements. Thus, selenium and tellurium are barely mentioned; palladium and osmium are dismissed in four lines; only two oxides and two acids of sulphur are described. Such omissions, wise in themselves, leave room for other more important topics. The theoretical sections include, not only the laws and theories on which the science is based, but also those more recent conceptions nowadays indispensable in explaining chemical and physico-chemical phenomena. Space is found for descriptions of many modern manufacturing methods, the details given being accurate and up-to-date. While many metals are altogether omitted, the more important are dealt with in a thorough manner. The book is illustrated with portraits of modern heroes of the science and representations of manufacturing processes, but far too few diagrams of laboratory apparatus are provided. With this exception, the book may be strongly recommended for students in their first year at technical school or college.

Systematic Qualitative Analysis. By R. M. Caven. xii + 240 pp. (Blackie.) 3s. 6d. net.—In the past, qualitative analysis has been made to play far too large a part in the training of the chemist. Nowadays the pendulum is swinging so far in the opposite direction that we are apt to forget that analysis may be used to impress on the mind a considerable body of detailed fact, as well as to establish a wide range of theoretical principles. Hydrolysis, reversible reactions, the general properties of dissolved substances, are types of the subjects which are constantly brought to the front if qualitative analysis is taught properly. The volume under review is sufficient proof of the fact that the days when analysis was unintelligent routine are left far behind. The author sets himself primarily to elucidate and systematise the principles involved in analysis in such a way that the subject may no longer appear to the student a mass of disconnected facts. Of the two main sections of the book, the first contains a general review of the methods of analysis, so that the student may know why the customary division of the radicles into groups has been chosen. Part II. is concerned with a detailed discussion of the group tables and confirmatory tests. The actual instructions for analysis are a mere summary of methods previously studied. The tables are on the customary lines, although there are a few departures from the usual methods, noticeably in the separation of the metals of the tin group. The book is thoroughly sound, and, for its size, a complete introduction to the study of chemical analysis.

Practical Organic Chemistry. By J. J. Sudborough and T. C. James. xviii + 378 pp. (Blackie.) 5s.—This work differs from most similar text-books of organic chemistry in that it attempts to cover a wide field of work and to give examples of all the more important types of operations carried on in organic laboratories. It contains not merely accounts of the preparation of typical organic compounds; it includes also common laboratory operations, equivalent and molecular weight determinations, and numerous simple quantitative experiments, as well as methods of identification of different types of carbon compounds. Many of the physical methods used in organic chemistry are also

described; for instance, the determination of rotatory powers. We notice a useful chapter on the velocities of typical organic reactions. Both in arrangement and matters of detail the book leaves little to be desired. The illustrations are especially good and well chosen, many of them being reproductions of photographs. The number of experiments is so large that an ordinary student will certainly not be able to perform all. The authors believe that greater interest is taken when different experiments in a section are entrusted to different members of the class. We doubt the wisdom of this plan in the case of beginners. For them a small manual is preferable, in which only the necessary typical experiments are described. We believe, however, that the present volume will be of great value for more advanced workers. Certainly it should be found in the reference library of every organic laboratory.

The Universal Crucible Support. (Griffin.) 3*s.* each.—Messrs. Griffin send an extremely simple and ingenious crucible holder. It consists of a stout, well-made iron tripod of ordinary shape, through the legs of which pass, in an oblique direction, sliding rods with pure silica tips. These can be adjusted to hold any crucible, or, indeed, any circular vessel, less than 3 inches in diameter; they are held firmly in position by means of brass springs. There are obvious advantages in the use of this stand. Unlike the pipe-clay triangle, it may be immediately adjusted to fit vessels of various sizes. The little quartz points do not break the flame, and the crucible is therefore heated uniformly. Moreover, a crucible is held more firmly than in a triangle. On the other hand, the expensive quartz tips are fragile, while the support, though less expensive than a tripod and platinum triangle, costs three times as much as the tripod and pipe-clay triangle generally used. Despite its convenience, we fear that the cost of the apparatus will prohibit its introduction into any but the advanced chemical laboratories of schools.

General Physics: an Elementary Text-book for Colleges. By Dr. H. Crew. 522 pp. (New York: The Macmillan Co.) 12*s.* net.—The purpose of this volume is to meet the needs of first-year students in physics at North-Western University, and the author's intention is to set before the student "a large and compact body of truth obtained by a method which shall remain for him, through life, a pattern and norm of clear and correct thinking." It is almost sufficient to state at once that the whole subject is treated in a most fascinating manner: teachers and students alike will enjoy reading it; and yet, except in quite a few minor points, it is remarkably accurate in statement and exposition. The author lays stress upon the historical development of our knowledge of physics, and much information on such points is given which cannot be found in the majority of text-books. The treatment is mainly qualitative, and very few experiments of a quantitative nature are described. But the volume could be improved in this direction only by adding to the text, for it would be undesirable to remove any portion of it as it now stands. No directions for experiments are given.

MESSRS. BAIRD AND TATLOCK (LONDON), LTD., of Hatton Garden, E.C., have issued recently a new *Price List of Chemical and Bacteriological Apparatus, Chemicals, and Reagents.* The volume is splendidly illustrated, and extends to 848 pages. Sets of apparatus for the analysis of milk, oil, paper, and water, also complete lists of different types of laboratory benches, fittings, and fume-cupboards, are included. All who are responsible for the equipment of laboratories may depend upon this volume for information concerning the most up-to-date fittings and apparatus.

Pedagogy.

British Physical Education for Girls. By A. Alexander and Mrs. Alexander. 320 pp. (McDougall's Educational Company.) 10*s.* 6*d.* net.—Among the practical problems of physical education are the co-ordination of games and "free" exercises, and the removal of monotony from the latter. The authors of this volume have had long experience, and the composite system which they describe tackles these problems well. It contains, as the director of the Berlin Royal Gymnastic Institute remarks in the preface, "valuable gymnastic ideas." The chief of these is the provision of an indirect mental stimulus for free exercises. How far this principle should be carried, and in what conditions it is applicable, are important questions which cannot be discussed here. We note that the varieties illustrated by the authors are well chosen; for instance, the use of wands, flags, hoops, and balls, and, in another species of stimulus, musical accompaniments. The exercises which combine body movements with training of the hand and eye are mostly excellent. There is a good series of skipping exercises. The way in which the system forms connections may be seen in the rescue from drowning, resuscitation, and fire-escape drill. From another side there are the movements used in the principal English games. From a third we have the tracing of scrolls and eights to music. This last series is followed by the chief of the old English dances. The volume is an interesting record of a personal system, and may be heartily recommended to teachers who are not experts in the subject. The photographs, it may be noted, are numerous and admirable. Some of the "games exercises" need correction; for instance, in swimming and tennis (*sic*). The "athletic sports" section is disfigured by "the egg-and-spoon" and "the bun race." No hints are given as to the ages appropriate for the various exercises. The principle of graduation is lost sight of in the attention paid to stimulus.

Art.

The "A.L." Carton-work. By Joseph H. Judd. 57 pp.; illustrated. (Leeds: Arnold.) 3*s.* net.—This addition to the "A.L." series of educational works is essentially a scheme of paper and cardboard work, with which is incorporated plan-drawing, paper-folding and cutting, mounting, brush and pastel colouring, and is directly correlated with mechanical and geometrical drawing, model drawing, mathematics, and general knowledge lessons. The scheme appears admirably designed as an introduction to manual work in wood and metal, and is clearly and simply expounded in a series of carefully graded exercises, with ample illustration in the form of plans, elevations, and isometric projections of the many and various models. It had been better, perhaps, to have confined the "strip-work" of the earlier stages to flat representations only, the attempted perspective of Figs. 35 and 36, for example, being extremely grotesque and misleading; for the rest, the exercises appear to be quite appropriate and exceedingly ingenious.

The Arts Connected with Building. Edited by T. Raffles Davison. 224 pp.; 98 illustrations. (Batsford.) 5*s.* net.—We can imagine no more fitting book to put into the hands of a budding architect than the present volume. Without being in any way a technical or historical dissertation on architecture, the book (which embodies a series of lectures delivered, at the instigation of the Worshipful Company of Carpenters, by a number of distinguished architects and designers) deals in an eminently readable and inspiring manner with matters coming under

such sub-titles as "Reason in Building," "Influence of Material and of Tools on Design," "Decorative Plaster, Lead, Wood, and Iron Work," and so forth, the whole forming an eloquent and convincing plea for a revival of the influence of character and individuality on craftsmanship. Mr. T. Raffles Davison, whose long connection with the *British Architect* renders him admirably fitted to act as sponsor to this collection of essays, contributes an enlightening introductory note, and the interest of the book is further enhanced by the numerous delightful illustrations of old and modern work.

Freehand Perspective and Sketching. By Dora Miriam Norton. 168 pp.; 262 illustrations. (Sales Department, Pratt Institute, Brooklyn, N.Y.) 3 dollars.—An outstanding feature of this little treatise on drawing, which places it at once above and beyond the countless others dealing with the same subject, is the charm and excellence of the illustrations. Whether as reproductions of pencil drawings or of pen-and-ink sketches they are at once an education in style, technique, and composition quite apart from any principle of construction they may be intended to elucidate. Incidentally, these principles, though travelling on most orthodox and familiar lines, are treated with a most refreshing breadth and thoroughness, and with such a wealth of variety in their application and expression as to avoid most effectually any appearance of being a mere collection of rules. The author rightly insists that the constructional methods should only be relied on as a means of *learning to see*, for, as she very truly observes, "the trained artist draws a vase in his flower study or a round tower in his landscape with no distinct recalling of ellipse laws, feeling only joy in the living curves as they spring out under his hand." A student working alone would find this book invaluable, while as a source of reference and inspiration it should find a place on every teacher's bookshelf.

Modelling in Paper and Cardboard. By John Y. Dunlop. 112 pp.; 222 illustrations. (Charles and Dible.) 2s. 6d. net.—This is a collection of working drawings, with descriptive notes, of a great variety of models and objects suitable for construction in paper or cardboard. As these range from the simple and orthodox pin-trays, blotting-pads, &c., to such bizarre articles as air-ships, submarines, and a "turning, sliding crank," the teacher in search of novelty will find here abundant material. If the author had sought expert assistance in the preparation of his perspective (or are they isometric?) drawings, it would have considerably improved the appearance of the book.

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 Value of Science Teaching in Middle School Forms.

In these days of overcrowded curricula and in the stress of preparation for the many school examinations, the value of those subjects which primarily aid in the mental development of the child is apt to be overlooked. Among the first in importance of such subjects we may rank elementary science, and the training given by it in the middle forms of a high school or municipal secondary school.

In these forms the teacher is not hampered by examination work, and his or her aim is, generally speaking, to prepare the children so that they will be better able to profit by and fully understand the teaching of the higher forms.

I would suggest, primarily, that the teaching of facts at this stage should be a relatively unimportant part of the work. After all, what can we teach that is of value or interest if we look upon the lower- and middle-school work as a period in which to impart information? The facts are frequently forgotten as soon as learnt, often because of their want of association with the details of the everyday lives of the children.

Many examples of science lessons to young children might be quoted which failed to be of use because they aimed at conveying information, and not at training in method. I would advocate, therefore, in this part of the school, making use of the unique opportunity of encouraging the children to draw inferences from their observations. The science scheme of a school should be infinitely elastic for this particular period of the work.

The teacher, who should be the most experienced of the science staff, should devise a series of interesting practical lessons to cover one or two years, according to the arrangement of the time-table of the school.

The chief object of this course of lessons should be as follows:

(1) To interest the class in the subject.

(2) To train in methods of inference from observation.

(3) To inculcate habits of neatness and accuracy.

(4) To teach the taking of notes of experiments in an orderly and concise manner.

(5) To give practice in oral explanation of work done.

Without interest the work will have no permanent value, and the child will learn to hate rather than to love science. The field is so vast and of such abounding richness that there is no difficulty in finding suitable material. On the other hand, no lessons can be so dull as lessons in general elementary science, more especially if relegated to an inexperienced teacher fresh from a university course in advanced work.

The secret of interesting the children is to be interested oneself, and from the large range of elementary text-books on science suggestions can often be found which may be elaborated or modified to suit the needs of the particular class. But, better still, let the children suggest the work themselves—within certain limits.

To teach the children to draw inferences from their observations should be the ultimate aim of this work.

Neatness and accuracy can be learnt in other parts of the school, as well as in the laboratory, but the value of cleanliness, orderly arrangement, and classification can nowhere be better demonstrated.

It is a mistake to employ a laboratory monitor to put out apparatus and to wash it up and put it away. The children do not thus learn that there is one place for each thing, and only one. They are not taught that each individual is responsible for clearing up, cleaning, and putting away everything he or she has used.

It is frequently said that if this plan is pursued five minutes, at least, of every lesson is wasted. Yes, if you are using every moment to impart information; no, if you are seeking to make the science lesson a valuable training to the child. The value of such an education in after life can scarcely be overestimated.

Accuracy in recording observations, in note-taking, in descriptions, or in drawings (original sketches, not copied from the blackboard) form an important part of this two years' course.

In many cases a sketch of apparatus saves much superfluous note-taking. These sketches should be, if possible, as large as the objects used, so that details can be accurately rendered.

The art of writing clearly, in a few words, an account of what you have seen and what you have thereby found out is not easily acquired. If practised in this part of the school life much time and trouble will be saved in the later work.

Help will be needed at first, notes perhaps put on the blackboard by the teacher at the dictation of the class, the suggested sentences criticised, and more concise wording asked for.

The class will soon respond to the teacher's efforts towards improving their style, and will quickly see the value of good notes and try to keep their books well.

Oral descriptions of experiments performed should occasionally be asked for. Concise note-taking is bald at the best, and not of great help in the writing of fluent English, to which end nearly all subjects of the curriculum may contribute.

If, therefore, these aims are kept constantly before the mind of the science teacher in the middle part of the school, the lessons which are sometimes so dull and profitless to both teacher and taught might become full of value and interest, for they contribute towards the education of the child that which cannot be given in so satisfactory a manner by any other subject in the curriculum.

E. HUGHES.

Pressure in Liquids and the Measurement of Relative Densities of Liquids.

THE simple apparatus described below may prove instructive to junior students commencing experiments on pressure in liquids and the subsequent measurement of relative densities of liquids by the method of measurement of balancing columns of them.

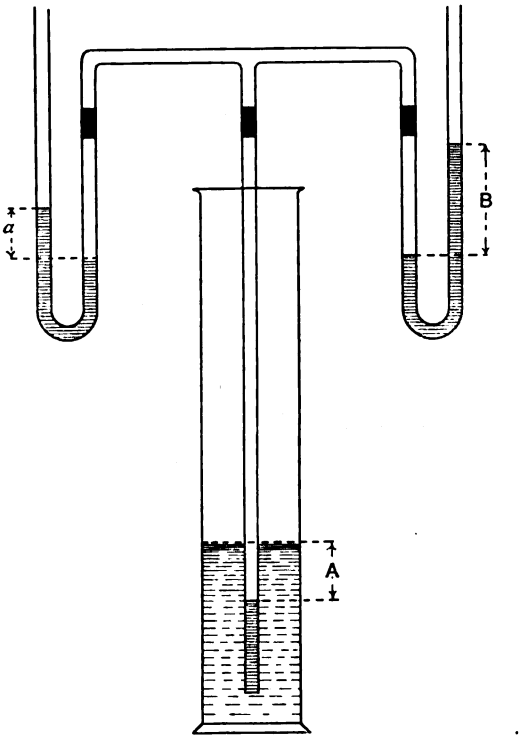
The apparatus, which is easily constructed, should be made out of one length of glass tubing (about 5 mm. diameter) of uniform bore. The vertical central tube of the **T**-piece should be about 35 cm. long, and the horizontal tube of the **T** about 8 cm. The limbs of the **U**-tubes are about 15 cm. long. To use the apparatus, clamp it in a retort stand at such a height that the vertical central tube is nearly at the bottom of a glass cylinder or measuring vessel. (The latter is convenient, as the graduations on it can be made to serve as a measure of length if compared with a millimetre scale.)

In one of the **U**-tubes pour water until the level of water in each limb is about 3·5 to 4 cm. above the bend. Pour about the same amount of alcohol in the other **U**-tube. The liquids should be allowed to run up and down the limbs of the **U**-tube respectively in order to wet the sides; the liquid columns will then flow up and down easily without "sticking."

Fix a half-metre rule in a retort stand so that the former stands vertically. Pour water in the measuring vessel until the difference in height between the two columns of water in the **U**-tube is about 10 mm. Measure the distance in mm. from the level of the water in the long vertical tube to the level of the water in the graduated vessel. This length, A, represents the pressure of the water, and it is transmitted equally to both **U**-tubes by pressure on the air inside the tube. Also find the difference in height of the columns in (1) the **U**-tube containing the water (*a*), (2) the **U**-tube containing the alcohol (B). Pour more water in the measuring vessel, and again make three similar measurements to those just described. Carry this out, say, six times, and record in a tabular form, leaving a fourth column for the density of the liquid. The following results were obtained with the apparatus:

Difference in height (*a*) of water columns in mm.	Height (A) of water column in mm.	Difference in height (B) of the alcohol columns in mm.	Relative density of alcohol
12 ...	12 ...	14·5 ...	0·83
18·5 ...	18·5 ...	23·5 ...	0·79
27 ...	27 ...	33 ..	0·82
34 ...	34 ...	42·5 ...	0·80
40 ...	40 ...	50·5 ...	0·79
46 ...	46 ...	57·5 ...	0·80

The numbers in columns 1 and 2 should agree, thus proving that the pressure is proportional to the depth below the surface of the liquid in the measuring vessel. This can also be shown graphically by taking the numbers of column 1 or 2 as ordinates and the numbers of column 3 as abscissæ, and plotting a "curve." It will also be seen that, since the pressure on the two liquids in the **U**-tubes is the same, therefore the weights of the two



columns of liquid are equal. Let the columns of alcohol and water be x mm. and y mm. respectively, then x mm. of alcohol are equal in weight to y mm. of water, $\therefore$ 1 mm. of alcohol is equal in weight to y/x mm. of water, which will be the relative density of alcohol, and is entered in column 4. Any other liquid can be used in the **U**-tube and balanced against the water in the other **U**-tube. Or, since it has been proved that the numbers in columns 1 and 2 agree, alcohol can be placed in one **U**-tube and turpentine, say, in the other, and their densities determined as before, but using the reading (*a*). The **U**-tubes are fitted on with rubber tubing to facilitate washing out.

E. T. BUCKNELL.

Kingsholme School, Weston-super-Mare.

The English Governess in Paris.

A YOUNG girl going to Paris for the first time to seek employment should not leave her own country without having decided where she means to stay during the time she may have to wait before securing the desired appointment. The question is, where is she to go? Happily,

several religious societies have answered this question in a practical way.

In 1875 the famous Ada Leigh Homes, 77, Avenue de Wagram, were started, which have ever since been a boon to the girl of small means. This home was the first of its kind to be established in Paris, and is still, perhaps, more widely known than any other. The Girls' Friendly Society and the British-American Y.W.C.A. also offer very comfortable and pleasant homes at a moderate charge of twenty-five francs per week.

Every year, at the beginning of October, many English girls, seeking posts as governesses, find their way to Paris, all eager to begin work as soon as possible. Each home has its own employment bureau; other young women, however, living elsewhere in Paris, are by no means excluded. Although a large number of French ladies apply to these bureaux, the demand for governesses is insufficient to embrace all applicants, who are obliged to turn in other directions for help. No one should have anything to do with agencies for governesses without being sure that they are trustworthy. Among those held by thoroughly trustworthy ladies are the following: L'Agence Dusausoy, 3 bis, Rue d'Athènes; L'Agence Mariette, 23, Rue Méromésnil; and L'Agence Stewart, 52, Rue Washington. In each agency the applicant has much weary waiting to endure, for there are many seeking posts besides herself. Voluble Frenchwomen, stolid Germans, and supercilious English damsels have alike to wait their turn in these agencies—it may even be a whole long afternoon.

The governess most in demand in Paris is the *gouvernante*, or nursery governess. She usually receives a salary of from fifty to eighty francs per month. But she need hardly hope to become a fluent linguist, for in most cases the *gouvernante* is expected to speak her own language from morning until night.

The *institutrice*, on the other hand, must have a good knowledge of French, as she has to accompany her pupils to the *cours*; she is supposed to take down any notes that may be useful for the home preparation which she herself supervises. If she is not capable of doing this she is not likely to obtain a post as *institutrice*.

The *directrice* of a middle-class school who advertises for an English governess, *au pair*, appears to offer great advantages, but advantages which are rarely realised. If the agreement is not religiously written down in black and white, the English girl will find that she is called upon to perform a hundred and one minor duties of which she never dreamed. Food, too, in such establishments is by no means of the best. The *directrice* of a school of this kind is very often in a chronic state of pecuniary difficulties, which lead her to believe that the chief end of *pensions* is cheapness. Filled with this exalted idea, she plunges into economies which are both ingenious and shameful. A thoroughly good boarding-school, however, is a very suitable place for those really desirous of learning the language, as they can very often make their own terms, reserving a part of the day for their own studies.

Before closing these notes mention may be made of a French home for girls in the heart of Paris, started by a member of the French Y.W.C.A. This home boasts of a dining-room, a drawing-room, and accommodation for twenty-two beds. The food is plentiful, wholesome, and well cooked. The *Foyer de la Jeune Fille* is very popular with the French girl, and it is only during the summer months that there are vacancies for strangers. Should any English governess bent on learning the French language care to spend some time in this home, she would be received at the modest charge of twenty francs weekly.

M. G.

Schoolboys and School Work.

As no one else has done so, I feel that I must direct attention to a very regrettable and ungracious omission on the part of the headmaster of Eton and Dr. Burge in their interesting work entitled "Schoolboys and School Work." One can hardly suppose that two gentlemen occupying such important positions in the educational world know nothing of certain schools which have long been working along the lines somewhat timidly—at any rate, so it appears to me—approved by Mr. Lyttelton: that would be to impute to these gentlemen rather gross ignorance of matters which ought to be their special study. The omission can therefore, I take it, hardly be unintentional. Surely a word of recognition, however brief, is due to the schools in which sensible education—or rather the real thing—has been already substituted for the Platonism, Aristotelianism, or whatever the education of 300 or 400 years ago is accurately called. I mean schools like the Perse at Cambridge, the work of the headmaster of which, Dr. Rouse, is too well known to be easily overlooked; Bedale's; and Clayesmore, which, judging from a very cogent and attractively written pamphlet entitled "An Experiment in Educational Reform, and a Plea for a Royal Commission on Public School Education," has been anticipating in practice ever since its establishment the reforms which Mr. Lyttelton—if I understand him aright—now endorses as necessary and inevitable.

I am sorry that he thinks there is so little prospect of the schools coming to a practicable agreement about the revision of the curriculum. It is a pity. My own opinion—for what it is worth—is that Tariff Reform would do a great deal for this country, but that an Educational Reform would do far more. I hope that the next administration, whether it be Conservative or Liberal, will look into the matter and see whether anything can be done officially for the cause of true education. A long-suffering public would, I think, be extremely grateful for such a service.

"ALERT."

THE letter which you have been good enough to send me signed "Alert" hardly requires comment.

My book was not written to advertise any schools, but to suggest how certain admitted difficulties felt by a large number of public schools, and nearly all preparatory schools, may be met.

If it be a fact that some of the recommendations made are already carried out here and there, it does not affect the question.

Moreover, there is a reference in a footnote to Dr. Rouse's methods, so that it is a misstatement to say that the instance of the Perse School is omitted.

E. LYTTELTON.

The Cloisters, Eton College, December 8th.

The School World.

A Monthly Magazine of Educational Work and Progress.

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THE RELATION OF ELEMENTARY SCHOOLS TO TECHNICAL SCHOOLS, DAY AND EVENING.[1]

By Prof. M. E. SADLER, M.A., LL.D.

THE EXTENT OF THE PROBLEM. NEED FOR MORE EXACT STATISTICAL INFORMATION.

FOR the vast majority of English boys and girls, our system of national education is a torso. It ends too soon. It is a trunk without a head. How to remedy this defect with practical wisdom, without expenditure so immense as to provoke reaction, and with the convinced co-operation of enlightened employers of labour, and of all parents who unselfishly desire to further the best interests of their children, is becoming one of the pressing questions of the day.

Out of some 1,300,000 boys and girls in England and Wales who are between twelve and fourteen years of age, there are (to the best of our knowledge) about 211,000 (in addition to partial exemption scholars) who have already obtained exemption from attendance at school, and are receiving no further systematic education. Out of the two million young people in England and Wales, who have passed their fourteenth birthday but are still under seventeen years of age, only one in four (so far as our knowledge goes) receives on weekdays any continued education. "The result" (I quote the finding of the Consultative Committee) "is a tragic waste of early promise. Through lack of technical training, hundreds of thousands of young people fail to acquire the self-adaptiveness and dexterity in handicraft which would enable them to rise to the higher levels of skilled employment. Through lack of suitable physical training, their bodily powers are insufficiently developed, and their self-control impaired. Through lack of general training, their mental outlook remains narrow, their sympathies uncultivated, their capacity for co-operation in civic welfare stunted and untrained. In the meantime, modern industry, in some of its developments, is exploiting boy and girl labour during the years of adolescence. An increasing number of 'blind-alley' employments tempt boys and girls, at the close of their day-school course, by relatively high rates of wages which furnish opportunities of too early independence, but give no promise of permanent occupation and weaken the ties of parental control."

The present state of things is not only intellectually and economically wasteful, but often morally mischievous. City life enhances the danger. Unskilled, or relatively unskilled, employment at thirteen, with good money, tempts a boy (and an increasing number of girls) like a baited trap. A lad is drawn into a way of life which leaves him at sixteen or seventeen without a trade to his fingers, and with the habit of steady learning clean gone out of his head. The years between thirteen and sixteen or seventeen are the years of educational leakage. We are like people who have laid down a costly system of water supply, but have left a badly-leaking pipe just behind the tap. In order that our system of national education for the masses of the people may bear better fruit in personal skill and in civic value, the time has come for us to secure a better foundation in the elementary day schools and the continuance of wise educational attendance during the years of adolescence.

Though our general sense of the gravity of the question is undoubtedly justified, we cannot define its limits with the statistical accuracy which in these matters is desirable. The statistics of the Board of Education (now, I believe, to be made more precise) do not show us, year by year, the number of children who have left public elementary schools, precisely classified according to age; nor, year by year, the number of pupils (also classified according to each year of their age) who are in attendance at continuation schools. Our knowledge of the educational fate of boys and girls during adolescence is hardly beyond the stage of painstaking conjecture. Nor do we know whether the "blind-alley" employments for boys and girls during the years which intervene between the close of the day-school course and manhood or womanhood are actually increasing in proportion to the mass of industrial employment, or only in certain branches of industry. In order

[1] Abridged from a paper read at the North of England Education Conference, Leeds, on January 7th, 1910.

to deal comprehensively with the question before us—the relation of elementary schools to technical schools, day and evening—we need more exact knowledge of the facts, both from a national and from a local point of view.

Our Common Aim.

Differ as we may in judgment as to the legislative treatment of the problem, we find, I think, but little disagreement among ourselves in educational aim. Do we not virtually concur in thinking that all boys and girls ought to receive, during the years of adolescence, some form of continued education which will develop their physique, widen their mental outlook, cultivate their sympathies, prepare them for the responsibilities of parenthood, equip them for trustworthy efficiency in the occupation by which they will earn their livelihood, and fit them for the duties of citizenship? If this is to be done, it will be necessary to mortise the work of the day and evening technical classes into the work of the elementary day schools. We need in the latter more training of the hand and of the constructive powers, not with any prematurely technical purpose, but as a necessary factor in brain development and in a liberal education. This will not be possible unless we have smaller classes in the elementary day schools and unless the course of training for teachers can be so prolonged as to permit training in educational handwork to be included in their course of professional preparation without congestion of studies, without overpressure of mind, without encroachment upon the indispensable liberal education, and without undue curtailment of that mental leisure which is needed for all healthy growth of interest, originality, and purpose. Nor do we conceive of the technical class, whether day or evening, as purely utilitarian or technological. Direct bearing upon subsequent employment or occupation it must have. But inseparable from its true educational influence is careful regard for the training of the body, for the cultivation of the sympathies and of the imagination by the love of literature, by music and by art, for an opening of the mind to the significance of civic responsibility, and also for those influences (often most powerful when least expressed in words) which help in forming a purposeful, steadfast, and disinterested character.

It is because the people's high schools in Denmark have not only aspired to these aims, but have largely achieved them that they have raised the level of culture in the whole nation, and have indirectly, and as it were in by-product, enhanced the economic welfare of the people. Again, it is because in certain parts of Germany, and especially in Munich, and in the Kingdom of Württemberg, the technical education during adolescence has been so arranged as to include the element of civic training that we gratefully acknowledge the stimulus which educational administrators in this country have received from German example. But there is nothing in the German achievement, highly successful as it has been in many places, which need make us feel that we are hopelessly in the rear. Many of the statements now current as to the universality of compulsory attendance at continuation schools in different parts of Germany seem to me unintentionally misleading. After persistent efforts, and with the help of some of the best informed of German educators, I have failed to obtain any comprehensive statistical statement showing the number of boys and girls between fourteen and seventeen years of age in different parts of the German Empire who are actually attending continuation schools. Where I have been able to test such figures as are published, I have been drawn to the conclusion that the enforcement of compulsion, even in those parts of Germany where compulsion is statutory, is less general than the wording of the statutes would lead us to expect. The whole subject calls for closer investigation. There is some reason to think that, even in the progressive parts of Germany (and there are large regions in which education is the reverse of progressive), the problem of securing continued education for the majority of girls, and also for those boys who are not intending to enter a skilled trade, is still far from having been effectively solved. We in England have indeed much to learn from Germany, and from some of the cantons of Switzerland, but it is right to remember that, for historical reasons which are far from discreditable to us, we have approached the problem from the point of view of the individual rather than from the point of view of the State. I can find no country in which the voluntary attendance at evening classes is so large in proportion to the adult population as it is in England and Wales.

Special English Difficulties.

In England, the difficulties which we find in the way of bringing the elementary schools into closer and more fruitful relation to a stimulating kind of further and largely technical education are partly psychological, partly administrative, partly economic.

(*a*) Of these the psychological are not the least important. Too many English parents are hard-set in the view that a child's education ends when he leaves the elementary day school. This is the fundamental fallacy, and that it should be so widespread throws no favourable light upon our past tradition of education. Patient propaganda on behalf of a larger and truer view of education will weaken the hold which this presupposition has upon the English mind. Again, parents suffer from want of imagination as to what may be made of their children, and from lack of knowledge as to how to prepare them for their right work in life. Here, again, there is need for organised propaganda, already undertaken by many local education authorities, by many teachers, and by many school managers and others interested in the welfare of the people.

Again, we have to admit that a great number of English employers and foremen are lacking in

insight into the true meaning and value of education, and also often fail to discharge their moral responsibilities for the further education of the young people in their employment or under their care. Nothing strikes me so much in comparing a German industrial city with an English as the keener interest on the part of the mass of German employers in educational questions, and especially in the educational aspect of the daily duties of the workshop. The first step towards the diffusion of a deeper insight into the value of education is the extension of a liberal, non-pedantic, non-examination-ridden, secondary education, accessible not only to the employing class, but to those who will rise to be foremen and thus hold responsible though subordinate posts in industry and commerce. When a man has himself had at school an education which has affected his whole life, he is more ready to understand the importance of securing a similarly suitable education for other people. And the drift of the thought of our time and of its moral purpose is to lead men and women to find a large part of the happiness of life in the furtherance of the collective welfare upon lines which permit and encourage individual responsibility and the unselfish intimacies of family life.

Much may be done by publicity. It is still too difficult to find out in any systematic way what is really going on in any branch of English education. I wish the Board of Education would publish annually a short pamphlet briefly summarising the methods adopted by the most progressive local education authorities in town and country in regard to attendance at continuation schools. Honourable mention in such a pamphlet would be a just cause of pride, not only to the local authority concerned and to its administrative officers, but to the teachers in the district and the citizens of the community. The idea might be applied to other grades of education besides that of continuation schools. And I would add that it would not be wasteful expenditure on the part of the Treasury to sanction a fairly wide gratuitous distribution of such official documents recording interesting educational experiments and successful enterprises in local educational administration.

(*b*) The administrative difficulties which prevent the better relation of technical classes, day and evening, to the work of the elementary schools are also serious, but not insuperable.

In my own experience, I have found that a committee or office, consisting only of men, is apt (in spite of good intentions) to pay more regard to the case of boys than to the case of girls. But we shall all agree that, in regard to education through adolescence, the needs of girls are as important as the needs of boys. Only they are different. On the Consultative Committee we came to think that there was good reason for suggesting that local bye-laws as to attendance at continuation schools should be distinct for boys and for girls, and that it should be left to the discretion of the local education authority to frame bye-laws for one sex only, or for part or parts of its district, or for those engaged in particular trades or occupations in that district. There is need for abundant variety and for much discretion.

There is a similar difference between town and country, though I am far from meaning that educational attention should be focussed on the urban areas and that the rural districts should be left in contented ignorance.

(*c*) The third great class of difficulties which prevent the closer relation of technical classes, day and evening, with the work of the elementary day school are the economic. It is idle to deny that a comprehensive system of continued education during adolescence (the kind of system which the country really needs and without which much of its present expenditure runs wastefully into the sand) will be a very costly thing to provide and maintain. On the Consultative Committee we tried to form an honest estimate of the cost. We came to the conclusion that a system of compulsory attendance at continuation schools of all young persons between fourteen and seventeen years of age would, if universally applied in a satisfactory manner, involve for maintenance alone an additional annual expenditure of two and a half million pounds. For my own part, I believe that if the work in continuation schools were made (as it should be made) thoroughly practical, the cost would be considerably greater. It is the tradition among educational reformers to minimise the estimated cost of the proposals which they desire to commend to their fellow-countrymen. Even Mr. W. E. Forster was betrayed into an unfortunate mention of a threepenny rate. Personally, I believe that it is false policy to mask the real cost of good education. It is sometimes better to have no education at all than a cheap and pretentious substitute for it. If one starts out with a wrong idea of the cost, and commits one's self to the Treasury in the form of an inadequate estimate, one may seem to get one's way a little sooner, but that is done under the penalty of starting on the wrong lines, with inadequate resources, and without any clear perception in the mind of the country as to the real significance of what is being undertaken. Now that the nation at last is beginning to think seriously about education, I believe that the right course is to be unflinching in preparing our estimates of the cost of furnishing the kind of education which the nation needs.

CONCLUSIONS.

The foundations of an effective continuation-school system must be laid through a change in the conditions of attendance and study in the elementary schools. Our primary need is a raising of the normal age for exemption from day-school attendance to the limit adopted in Scotland since 1901. Further, is not the time ripe for imposing on every local authority the statutory duty of making suitable provision of continuation classes for the further education of young persons

resident in their district, from the time they leave the day school up to their seventeenth birthday, and of keeping a register of all such young persons, with a record of their occupations? In order that this duty may be rightly discharged, it appears to me indispensable that the Parliamentary grant in aid of continuation schools should be materially enlarged. Without such aid the poorer districts in town and country will not be able to support the expense of providing instruction sufficiently practical, or teachers adequate to the task of imparting it. In this particular grade of education the schools must necessarily compete with industry and with commerce for the services of those who are really competent to teach what the pupils will most require to learn.

In dealing with a stage of education so intimately bound up with the conditions of industrial and commercial life, those local education authorities which have drawn into consultation representatives of the employers and of the workpeople in each trade have set an example which the whole country should follow. In this way alone, and with the growth of public confidence in their fair-mindedness and educational insight, the local authorities will acquire that moral authority which will alone enable them to exercise the power, almost certain in the end to be entrusted to them by statute, of prescribing the limit of hours of work which no young person under the age of seventeen may exceed in any day or week in employment and systematic education combined. But in order to secure in an effective way physical, technical, and civic training for all young people during the years immediately following the close of the day-school course, two other statutory changes seem to me to be necessary.

First, it should be lawful for the education authority of any county or county borough to make bye-laws (subject to confirmation by the Board of Education) for requiring the attendance at continuation classes up to any age not exceeding seventeen years of any young persons resident or working in their district and not otherwise receiving a suitable education. Secondly, Parliament should make it the statutory duty of every employer of any young person under seventeen years of age (*a*) to enable him or her to attend continuation classes for such period of time and at such hours as may be required by the bye-laws of the local education authority of the district in which such young person either works or resides; and (*b*) to supply the names of all such young persons to the local authority on its demand. And, in order to secure the regular attendance of pupils at technical and other continuation classes in areas where such attendance is made compulsory by bye-law, all employers in such trades or parts of the district as the bye-law may specify should be forbidden, under penalty, to employ any young person under seventeen years of age who fails periodically to produce a card attesting his or her attendance at continuation classes in conformity with the terms of the local bye-law.

INDEPENDENT STUDY IN SCHOOLS.[1]

By Sara A. Burstall, M.A.

President of the Incorporated Association of Headmistresses; Headmistress of the Manchester Girls' High School.

THE increasing public interest in education among us sometimes shows itself to-day in complaints as to the inferior quality of the product which our schools turn out; the incapacity of the young people to grapple with practical difficulties; their inferiority, it is said, to those whom the schools produced in the last generation, when nothing like so much of national effort and national resources were devoted to education. The complaint is not altogether just, the reproach not wholly deserved; there is plenty of good stuff being turned out from our schools and colleges, and the requirements are certainly higher than they were years ago, when we were at school. But it is true that our young people are lacking in self-reliance and the power of independent work, and there is reason to believe that this failing is, in part, the fault of the school, or rather, may I say, has been encouraged by modern methods of school work. In the old days, in the small ungraded school, pupils of necessity worked alone for a good part of their time, and the teacher heard their lessons, and gave each an occasional bit of help, as he or she could. Under such a system, the poorer half of the scholars made little progress; perhaps the time was wasted, and they fell out early from the ranks; but the minority of abler pupils learned to work alone, to struggle with difficulties for themselves, to use books—such books as they had—and thus those of them who cared to work acquired a capacity for independent investigation, which to-day is not so obvious among our abler pupils. The mere fact that in so many cases boys and girls learned lessons without receiving any explanation, and said them, it may be mechanically, to the teacher, taught them at least what learning by heart meant.

Nowadays things are quite different. The classes are graded and standardised, courses of study laid down; we teachers have been taught methods of exposition, how to marshal our material, and introduce it to the pupil's notice. In other words, to-day too often the teacher learns the lessons, and says them to the children. The children listen more or less attentively; and their duty is to take in all this carefully prepared material, so that they can reproduce it when necessary. This last phrase gives the main reason why the modern system has arisen. It has been the result of the examination test, alike of the teacher's skill and of the children's education. If one is to be judged professionally by examination results, one cannot at the same time encourage self-reliance and independent work. If one does, time and energy will be wasted. The child who succeeds at school to-day is not the one

[1] A paper read at the North of England Education Conference, Leeds, on January 7th, 1910.

who has secured knowledge for himself, but he who has followed with docility the teacher's exposition, who has paced in the beaten road, and has had no independent aspirations to investigate parts of the subject not in the syllabus. Our English examination system has injured education in many ways; it is still seriously injuring secondary education, and nowhere more than in forcing the teacher, almost in self-defence, to do for the children half the work of gaining, arranging, and applying knowledge; teachers do not dare to risk the result when children work for themselves. Whenever this is done (believe one who has tried it), varieties appear. Some children get on much faster than others (the dull ones do not get on at all), and practical difficulties arise in handling a class which do not appear when everything is systematised, and the teacher gives a carefully prepared lesson, which the children are supposed to assimilate, all pretty much in the same way. Self-reliance means, and must mean, that the weak go to the wall, since they have not the power of doing things for themselves.

In justice to our profession, teachers, in any discussion of this subject, must make clear to the general public that self-reliance and independent work in schools, desirable as these powers are, mean that the teacher must be left free to organise his class and his work for himself, and to deal with different children in different ways. We may presumably take it for granted that the school should encourage self-reliance; the school must train for life; and of what use in life is a person who has no power of independent initiative—nothing of the pioneer instinct? We may also assume that our young people, in spite of the advance of civilisation and the increase of town life, still possess the instincts of the pioneer. Surely the wonderful success of the Boy Scouts' movement proves this fact. What we want in the school is a recognition, alike by teachers and administrators, of the need for developing self-reliance, and of the conditions under which this can be achieved—first, as has been said, the pressure of examinations must be lightened. It has already been lightened largely in the primary school, but the secondary school still suffers.

Next, time is needed if pupils are to be trained to work alone; they are certain to make mistakes and waste time, and they therefore cannot do as much as if everything was carefully planned and arranged for them beforehand. We have learned this through experience in the teaching of science by the new heuristic methods. Independent work may be thus done, and a few boys may learn how to work alone, how to perform experiments, or even to conduct investigations for themselves; but the form as a whole will have wasted a good deal of time. When pupils read up in text-books for themselves—another form of independent work—there is less waste of time, for reasons I shall endeavour to state presently; but undoubtedly pupils will learn more geography in a given time if the teacher carefully prepares a lesson, say on the English import of wool, and the pupils afterwards reproduce what she has told them, than if they are turned into the public library, or even the school library, to find it all out for themselves.

Not only is the cost greater in time if independent work is done; it is also greater in money. More books and better books are required if the independent work the children do is to be worth anything. Manual work, as we all know, is largely valuable because of the training in self-reliance and independence that it gives, but manual work is a costly subject. It is much less expensive to have a teacher giving grammar or formal arithmetic to forty or fifty children sitting at ordinary desks, than to have the same fifty children split up into groups, half doing carpentering and the other half cooking—which means, of course, places specially fitted up, raw material, tools, fire, and, in any case, two or three teachers, whereas one served for the grammar lesson. There is another difficulty in encouraging independent study in girls' schools, and that is the tendency of girls to overwork. The present writer has had some experience with history classes, in trying to get the girls to work up material for themselves on particular topics, and in letting the pupils take turns in class in expounding to the others, either orally or by reading from a prepared paper, the particular topic for which each was responsible. This plan rouses interest and cultivates self-reliance; it presupposes, of course, either a good school library, books at home, or a public library, which acts in combination with the school; but it does lead too often to overwork. A girl will spend a disproportionate amount of time in working up her topic, and will either neglect the other subjects she has to do, or lose the necessary exercise and rest required for health. Probably with boys, who are less inclined to overwork and are naturally more self-reliant, it may be easier to get work of this kind done.

It is certainly possible to encourage young people to read more for themselves—they require, of course, guidance differing according to the subject and the conditions; the public library, for instance, may set apart an alcove where books are put dealing with the history or geography, literature, &c., taught that term in the Municipal Secondary School in certain forms, and the pupils might be told to go there and use the books. Undoubtedly every school ought to have a library, and the older pupils should have time and opportunity given them for studying alone, with free access to the shelves. Many of us know that this can be done practically with very little difficulty. The younger the pupils, of course, the more guidance they need; sheets of directions with references can be prepared. If the teacher has a class for some time she can begin with very easy exercises in the independent use of books, selecting, for example, certain passages to be read, and then requiring the substance of these to be reproduced in class orally or in writing, she having done nothing to prepare the ground, but leaving the pupils to grapple with new mate-

rial on particular pages of the text-book for themselves. Later they may be taught to use several books, look up references, and the like.

Undoubtedly we teachers ought to be alive to this need for cultivating self-reliance, and we ought to do more than we are at present doing for this end. There is a tendency to greater freedom in the schools, and we must use this freedom to experiment as we each can. In mathematics we can often do more by walking round the class while pupils are struggling with problems, just giving them a word or a suggestion here and there, than by elaborate blackboard exposition, even if the class joins in with us. This latter lesson would be more impressive to His Majesty's Inspector, but the children will not learn as thoroughly as if they were struggling by themselves, though they may cover more ground.

Latin, again, is a subject the educational value of which, so long and so widely acknowledged, depends largely on the fact that the pupils cannot make progress in it without working by themselves. In doing an unseen piece of translation into English, for instance, the pupil must collect all the material he has, in the way of knowledge of vocabulary, grammar, &c., and use his own intelligence to get at the meaning of the passage. Latin prose lessons, where the teacher writes on the board the correct version that has been made up by the class for themselves under oral guidance, is another example of how Latin can be used. The same can, of course, be done in French. At an earlier stage in a language pupils may be taught how to translate, say, Caesar, by going over the work in class, the teacher not *telling them* the meaning, but showing them how to get at it.

The difficulty as to time with independent work can only be met by reducing the number of subjects studied in any one year. We ought to follow the intensive system far more than we do; take up a subject, work at it every day or twice a day for six months or a session, and then drop it. A certain amount, of course, will be forgotten, but that would happen anyhow; and this intensive study for short periods would make it possible for pupils to work alone, more than they can do when they are learning a great many subjects in one week. We must be prepared, too, with some plan for meeting the difficulty that the strong will become stronger and the weak weaker if they work by themselves. The stern but wise saying, "To him that hath shall be given," becomes true in school directly room is given for the development of personality.

In conclusion, may it be said that we in England have to make up our minds what the aim of our education is? Do we want the boys and girls to acquire a certain amount of knowledge or even facility in carrying on processes they have been taught in school? If so, let us keep to the examination system. But in view of modern conditions, so constantly changing, so dangerous, so insistent on efficiency for success, whether in industrial life, in the home, or in citizenship, should we not rather train our young people to develop and cultivate initiative, the power of working alone and of self-reliance? Such strength can only come through possibility of failure. It is crushed in an over-organised system of education.

THINKING, READING, AND WORKING.[1]

By Prof. W. A. Herdman, F.R.S.

WHEN I was invited by your Governing Body to come and speak at this prize distribution, I was pointedly asked to address the *school,* not the platform and the parents; and it was an invitation in those terms that I accepted. I propose, then, to talk *to* the school, not *about* the school.

It may seem to you that it must be a very long time since I was a schoolboy, but I can assure you that it does not seem so to me, and I have quite a vivid recollection of my thoughts and feelings when I was a small boy such as some of those I see before me. Since then I have watched children of my own pass through all school ages. Moreover, the boys and girls I have taught at the university for the last quarter-century are only in the stage immediately above the oldest of you; some of them have come to us with scholarships from this school, and others, after being with me for three or four years, have been appointed here as teachers. So I think I may claim to have close connections with you, and to have some knowledge of, and entire sympathy with, your ways and views.

One of my children who had been to a prize distribution like this, when asked, "Well, what was the address like—what did he say?" replied, "Oh, it was very dull; and I don't know what he said—I had more important things to think about." Now I have the greatest respect for that kind of answer, and if—as may possibly be the case—some of you have more important things to think about, all I can say is that I hope I shall not disturb you much, and I feel like apologising for my intrusion on your thoughts.

For the first thing I want to say to you is *Think*—think often and think hard. I don't mean merely passing thoughts that float into one's brain and out again without producing much effect—what we may call "snippets" of thought; but long, consecutive, story-like thoughts, or arguments, such as enable you to think a thing out for yourselves, or to consider a subject from different points of view. Youth is the time for *long thoughts,* and such thoughts are most valuable to you in your youth, and may influence your whole future life. They enable you to form opinions and to realise your own tendencies and capabilities. It is in the course of such long thoughts that ideas occur to you, and original ideas were

[1] An address delivered at the distribution of prizes at the Holt Secondary School, Liverpool, on December 20th, 1909.

never of greater importance in the world than they are just now.

Don't imagine that such a habit of thought as I recommend will waste time or take your attention from anything more important. You can always think when you have nothing else to do. Never let your mind be a blank—nor yet a sieve through which useless snippets of thought are pouring. Fill in odd times, that would otherwise be wasted, by thinking about some interesting or important matter that has occurred to you, or that you have heard of, and follow up your train of thought fully. When you are waiting for something is a good opportunity for thought; whilst walking is another.

You may perhaps say to me, "But if we think like that as we walk about we shall become dreamers." Not a bit of it. And even if a few of you do, to some slight extent, there is no great harm in that. The world needs more dreamers of that kind—that is, imaginative thinkers. Some of the great men of the world have been dreamers; and dreaming, or thinking deep, on occasions, will help you to be doers also. You have plenty of other things in your active school life to keep you from being too dreamy. Don't be afraid of long thoughts making you unpractical. At the worst, you may on an occasion forget for a few minutes where you are going—which reminds me, if I may tell a little tale against myself as an example, that once after changing house, and as a result of thinking as I walked home, I found myself some distance in the wrong direction trying to open the door of my old house with the key of the new one. Well, that kind of thing would probably not happen twice, and it is a small penalty to pay for a good long think.

Of course, there is a time for everything, and I do not advise you to engage in a daydream when crossing in front of an electric car, or when sitting on a rock with the tide coming up around you. But barring some few occasions like that, I believe I am right in recommending you to get into the habit of thinking long thoughts and of concentrating your attention on the subject of your thoughts—*think long* and *think hard*.

The second word I have to say to you is *Read*. Read all you can. And as I told you not to think snippets, so I would now tell you not to read little snippets. Read books rather than magazines, and read more serious newspapers rather than frivolous trash. You will soon come to enjoy the more solid reading—like the long thoughts. It will store your mind with the thoughts and actions of great men in the past and the present, and will give you more to think about, and will enable you to think better—and that is one of the main objects of education. You see I take for granted that you want to educate yourselves. Remember that your education is a process that ought never to stop. It is not confined to school time or to school life, and you can do much for yourselves by taking every opportunity of reading books on many subjects. If you cannot get the best books, read the second best. I would almost say read anything rather than nothing; and if you are unable to read a book fully, read what you can of it. It is even better merely to glance through a book than not to open it at all. You may, at any moment, see something in a book that inspires or interests you. Next best to being well-informed on a subject comes being interested in it; and the more subjects you are interested in, the better and the happier life you will have. You may be thinking that reading in such a manner might lead to superficiality. Well, so it may in those subjects of which you read only a little; but I know that every one of you is, or will be, studying more fully and deeply some one subject. Your object, both in youth and throughout life, must be to know as much as you can about whatever is your main business; but I advise you also to pick up even a superficial knowledge of as many other subjects as you find possible. Aim at knowing all about one thing and something of everything else. You will find when you have tried it how delightful it is to dip into a new subject, or to go browsing over the shelves of a library. I have been an omnivorous browser all my life, and I am often thankful for the hours I spent in my youth sitting on the top of the library step-ladder looking into book after book. In the twentieth century, and in a city with free libraries, we have no excuse for not reading—good books are so plentiful nowadays and so easy to get.

With all your thinking and reading you must, however, not become unpractical. It is recorded that in the Middle Ages there was once a long controversy as to the number of teeth in a horse. This is said to have been debated by learned men with great energy in many contentious writings, and apparently none of the controversialists thought of the simple expedient of opening the mouth of the horse and actually counting the teeth, but tried to sustain their views and silence their opponents by quoting the writings of the ancients.

Therefore the third and last thing I want to say to you is, *Do something practical*. Get into the habit of making things with your hands. Make cakes or toffee; make a flying-machine, a motor-boat, or a steam-engine; make chemical experiments or electrical apparatus, or a collection of natural objects—I don't care what it is so long as it is something real and concrete, something more than words and thoughts. In this complicated body our nerves and muscles and sense-organs are so wonderfully interwoven with one another that practical work such as cooking and carpentry and games of skill react upon our nervous system and help in our education.

To those of you who are mechanically or scientifically minded, who will be chemists, or naturalists, or engineers, no urging to practical work is needed. It would be impossible to keep you from doing practical work. You would make experiments with the sand on the seashore, and observations on the flow of water over the mud in the gutter if you were given no other facilities—

and, of course, I know that in this Holt School you have well-equipped laboratories. But I am not satisfied with giving facilities for practical work to those who wish it. The most literary or artistic or imaginative amongst you will, I believe, be the better for having the other side of the mind cultivated, even if only to a small extent. I should like to see every boy and girl given an opportunity of learning something of some branch of a practical observational science, such as natural history or geology. Such an introduction to natural science is an awakening and an inspiration to some, a pleasure and interest to many, and cannot be less than useful and informing to all minds; and, at any rate, let all of us, either in connection with such a branch of science or apart from it, have the chance of seeing what we can do with our hands—I mean, of course, skilled hands guided by thinking brains.

You should regard all your capabilities as windows letting light into the mind, and it is a great pity to keep any window blocked up. The window that looks out in the direction of experiment and invention or discovery lets in, I believe, as cheerful and illuminating a light as any; and it is opened best by the skilful adjustment of muscle and nerve in doing something practical. I have no doubt that you all do some form of practical work in this admirably guided and well-equipped Holt School, but that is not enough for my purpose. Just as I should like you to do thinking and reading outside school, so I want you to take up some kind of practical work for yourselves—anything you are interested in will serve—and I should like to suggest that the observation of living nature and the making and classifying of collections of natural objects is a form of practical work which has proved most fascinating and stimulating to many young people in the past, and, moreover, has led some of them to become scientific investigators in after life. You cannot know yet from your own experience, but I can assure you it is true that a scientific pursuit or "hobby" is a most desirable addition to anyone's life. Many men whose everyday work in the world was something quite different have found interest and pleasure throughout life in some branch of natural science started in youth. It is a peculiarity of our country that many of our most distinguished men of science have been, not professors of the subject, but lawyers, doctors, ministers, and business men. I could give you dozens of examples: let me tell you of one case that is of special interest to all of us who belong to Liverpool.

When I came to Liverpool nearly thirty years ago, I met two busy professional men—Dr. Drysdale, a physician in Rodney Street, and Mr. Dallenger, a Wesleyan minister—who, working together in their leisure, had recently made some remarkable discoveries as to the minute organisms that live in decaying matters. Some of these and other microscopic living things are of the very greatest importance as affecting man's weal or woe—causing sometimes his prosperity and sometimes dire calamity. Some of these organisms are the disease germs that threaten life; others are the unseen friends upon the help of which his industries and his very existence may depend. Mr. Dallenger and Dr. Drysdale, although full of other duties, and not professionally trained as biologists, did splendid pioneer work in finding out the habits and peculiarities of some of these lowly friends and foes of man, and by taking it in turn to be on watch at the microscope they managed to keep the same minute developing speck under observation hour after hour, day and night, until it had passed through all the complex stages of its life-history. Many other examples could be given to you of patient, enthusiastic, and important work which has been done by English amateurs of science.

We who dwell in great cities are under some disadvantages compared with boys and girls in the country; but still there is plenty even for us to watch and think about in the common plants and animals around us—and we have in addition what those in country places have not, the great museums and libraries to help us. Then, fortunately, there are the holidays—in which all practical out-of-door work can be done best. I believe in holiday work; but it ought not to be the same as school work. It ought rather to contrast with it, so as to bring in a new and refreshing interest. We all know the truth of the old Manx proverb, "Caghlaa obbyr aash," meaning *Change of work is rest.* No sensible boy or girl would think of wasting a holiday in doing nothing. We all want to spend that most valuable and far too short time in the most interesting way; and I would suggest to you that holidays are the time for practical work of all kinds, for making aeroplanes and experiments and natural history collections, for watching the stars, the waves on the seashore, and the habits of birds and insects, for exploring and observing and getting into difficulties, and fighting your way out of them, and for starting aquaria and stocking them with fresh-water plants and animals. I knew a young man in Liverpool—a working man—who had a row of wide-mouthed glass jam jars in his window containing most interesting water beasts, and he cleverly put together a microscope himself because he could not afford to buy one, and yet was determined to see the minuter things in the water and watch their habits.

My three words to you, then, are—and possibly even those who have had more important things to think about might remember this: THINK, READ, WORK—that is, Think hard, Read much, and Do something with your hands.

The Elementary Geography. Vol. vii. *The British Isles.* By F. D. Herbertson. 192 pp. (Clarendon Press.) 1s. 9d.—Mrs. Herbertson has succeeded in producing an interesting and attractive elementary geography of the homeland. The book is likely to become popular as a text-book for junior classes. The maps are good, the illustrations well chosen, and the letterpress simple. We are glad to notice that due attention is paid to practical work.

THE TEACHING OF FRENCH IN THE TRAINING COLLEGES.[1]

By HARDRESS O'GRADY,
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NO students should be admitted to our courses in French who have not a sound linguistic training from the point of view of speaking, reading, and writing. The training college is emphatically not the place to do such preliminary work. It is to the secondary schools that we must look for progress in these matters, and I hasten to acknowledge the attempts which have been, in many cases successfully, made to improve the leaving standard in French. But I am equally certain many have been misdirected because they have been uncoordinated and inchoate. I should like to lay down the essentials to be complied with before a student is admitted to training-college work in French. They should, in my opinion, be these:

(1) The absolute knowledge, understanding, and grasp of not fewer than 7,000 words and some 1,000 phrases, among which should be all the commonest words and phrases of French.

(2) The absolute power to use the vocabulary so acquired; that is, a working knowledge of grammar and syntax, as much, for instance, as is contained in Berthon's "Première Grammaire Française."

(3) A pronunciation worth eight points out of ten acquired by a sound gymnastic course of phonetics.

(4) The power to read fluently.

(5) Conversational ability to speak slowly and correctly, using the acquired vocabulary.

(6) The ability to write simple, correct French.

Such are the desiderata. But I find actually an immense diversity of attainment, and in men of the same calibre I find that one has acquired a vocabulary that is mainly military, another mainly political, another mainly commercial or historical or dealing with family matters. And I find that the excess of one type of vocabulary means that many of the other necessary association groups have been neglected.

As regards the work we should do in the colleges it is impossible for me to do more than touch upon a few outstanding points. The course should fall under two distinct heads—academic work and training in method. Naturally the academic work may itself be made a specimen of method, but it is hardly the method applicable to the teaching of French in the lower and middle forms of a secondary school. The training in method, on the other hand, would deal entirely with earlier work. I will take this first.

The training in method should have for its object the inculcation of the following principles which I have laid down elsewhere, but which bear repeating, since they are at the very base of the direct method:

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

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

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

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

(5) To exercise knowledge by written as much as by oral work.

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

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

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

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

The students should be made to understand that the principle of teaching French should be that of getting children to grasp the meaning of new words by reference to pictures and words already known or by actions, or by drawing on the board, and so on; that they should be trained to answer the teacher's and each other's questions, and to ask questions themselves; that the learning of grammar should be to a great extent a process of classifying separate instances and specimens. And I repeat most emphatically that a sound training in elementary phonetics should be the basis for all pronunciation work. The course followed here should be one in which the acquired facts about the production of the sounds in the child's mother-tongue are extracted by a series of questions constructed to make the child think for himself. I have given an extremely detailed series of such specimen lessons in THE SCHOOL WORLD for October, November, and December, 1907.

This part of the training-college work is perhaps the most important from the training-college point of view, because there is a most pressing need for an adequate understanding of the fact that modern languages are the spoken vehicle of thought, and that all training should aim at making the child understand and speak French and German, so that his French or German association groups may be so strengthened and enlarged that foreign literature will naturally be attracted to them, and in them find a congenial resting-place.

I come now to the literary work which is the peculiar academic property of the training college as distinguished from the secondary school. Here each lecturer may let loose upon his students his æsthetic, his enthusiasms, his idiosyncrasies. Here I maintain the lecturer's business is to suggest, rather than to teach. He should be a tremendous energiser, stirring up not only the concords but also the discords of those who hear him. He should open the door of the French mind to them and hint at the treasures therein contained; he should lead them in a little way,

[1] From a paper read before the Training College Association, December 16th, 1909.

but to them should be left the further adventure, the quest, and the achievement. One word of warning here seems to me to be urgent. It is, if I may parody La Bruyère, "que la littérature ne nous a pas été donnée pour juger des hommes; elle ne nous sert que de conjecture." For how few of us can apply to it the methods of a Bourget or a Taine?

But I have still a word to say on method, and some of you may be shocked when I add that here especially, here in the academic and literary period, I consider phonetics to be of the utmost value. For what, after all, are phonetics but the consciousness of sound values, the study of pure sound, of rhythm and stress? And treated as such, we have two tremendously suggestive paths of study opening before us. In philology we can use the positions of the tongue in the mouth, the positions of the lips, the air direction, the presence or absence of vibration for the various sounds next to or near one another to explain scientifically the alterations in words, the development or disappearance of certain dialects, and so on. That is, phonetics make philology no longer a matter of arbitrary variables, but one of scientific exactitude and reasonable change.

But it is as a means of better appreciating French literature—of all modern literatures the most supple, the most harmonious—that phonetics appeal to me. For the great writer has read aloud, or heard the mental echo of, the sounds, the words, the sentences he makes, and this study of pure sound will help us to realise his æsthetic. With the poet especially this study will help us to understand the peculiar avoidance or repetition of certain sounds, and so we may gradually realise his poetic and the Ars Poetica of the whole language. For it is only, so it seems to me, by the concentrating of our attention on pure sounds and rhythms that we can appreciate the exquisite music of such poems as Verlaine's

Les sanglots longs
Des violons
De l'automne
Blessent mon cœur
D'une langueur
Monotone.

Or the same poet's marvellous sonnet:

Je fais souvent ce rêve étrange et pénétrant
D'une femme inconnue et que j'aime et qui m'aime . . .

And certainly only by such study can we appreciate the evolution of that modern school to whom tone and tint have an exquisite value of their own.

But, after all, whatever our methods, our greatest and most delightful object in academic work must be to make living to our students the literature of that language which Emile Faguet, critic and Academician, has called "ces belles et bonnes lettres françaises, notre gloire la plus pure, notre entretien le plus doux, notre consolation la plus pénétrante, notre viatique aussi le plus salutaire, s'il est vrai, comme on l'a dit et comme je le crois, que c'est avoir profité que de savoir s'y plaire."

EDUCATION IN ENGLAND AND ABROAD.[1]

By Otto Siepmann,
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In elementary education Germany had a start of more than a century as compared with England. For rich and poor alike attendance at the elementary school had been compulsory in every German State for more than a hundred years before the Forster Act (of 1870) became law. The system is of long standing, and experience has shown that the organisation and working of the arrangement are practically perfect. It would be difficult to overestimate the advantages which Germany has derived from a sound national system of elementary education, supplemented, for the majority of men, by a course of military service. To this system of teaching and discipline must be ascribed the order and energy, the thrift and the earnestness of purpose which characterise the German people above all others.

The curriculum in German elementary schools is of the simplest. Originally the three R's, religious knowledge, and singing were the only subjects taught; to these have been added at various times the elements of geography and history, to stimulate interest and encourage patriotism, and for pupils of the upper standards, a certain amount of natural history. The compulsory school age is from six to fourteen, and although there is some diversity in the excellence of the school buildings, they are, for the most part, airy and good.

The great principle on which both elementary and secondary education is organised in Germany is one with which one might feel inclined to disagree. In Germany the State does not exist for the individual; the individual exists for the State, and the State considers that it is to its own advantage to have, above all things, a high average level of knowledge and ability. This the Germans have certainly succeeded in attaining in elementary education, and it is in this high average that their great superiority in elementary education consists. Yet even here the system is open to criticism. The elementary schools and training colleges from which their teachers are recruited constitute a division by themselves. No provision is made for clever boys to go on to higher institutions, nor for future teachers to pass through a secondary school. There is consequently no attempt to put the future elementary teacher on the way to a degree. He devotes his whole time during the six years' course of preparation for his profession to learning his business as a primary-school master.

The system, in spite of its apparent injustice, has its good points. Since the most gifted scholars from the lower strata of society have little or no chance of promotion to spheres of higher activity and influence, they are not lost from their own ranks and the quality of elemen-

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

tary-school teachers is improved by a caste system which confines them to their class. They pass through a training college which ensures for them a thorough knowledge of the subjects and the methods of their profession. For some time past none but certificated teachers have been employed in elementary schools, and the number of training colleges in Prussia alone has risen from 118 to 156 between 1901 and 1908.

Let us now turn to the German secondary schools. The organisation is as complete as in the case of elementary schools; and the principle is again the same. Individual prominence must be sacrificed to raise the common average. And to this must be added another principle, equally important and similar in its effects, that all subjects are taught in form; this applies to every school, and to every boy from the first to the last day of his career.

The education of a boy in secondary schools may proceed upon any one of three lines. It may be classical, semi-classical, or modern. For centuries Germany clung to a belief in the classical system for higher schools, but the force of circumstances eventually necessitated the formation of two new types of school, each designed to give a liberal education of a different kind. Yet the classical Gymnasium still holds its own (although there is no longer any very close attention paid to composition in Latin and Greek), for in 1908, of the freshmen who matriculated at Prussian universities, 77 per cent. came from Gymnasien, or classical schools.

The Real-gymnasium or semi-classical school is differentiated from the Gymnasium by the fact that, while Greek is not taught at all, modern languages, mathematics, and science receive greater attention. The Oberrealschule is purely modern in its curriculum, and excludes both Latin and Greek. All three types have a nine years' course, usually begun at the age of ten, preceded by three or four years at an elementary or preparatory school, which is often attached to the college.

All these schools are established by the State, or by the State in conjunction with the municipality: their fees range between £5 and £6 per annum. The classes are large, and the teachers, as a body, thoroughly well educated; and although in recent years some relaxation has been made in the demands upon them, the pupils are usually interested and industrious.

There are some to whom the principle upon which these schools are founded will appear to be radically false, however good may be the discipline and the organisation in its execution. As the main intention is to make it possible for a high percentage of the pupils to pass the leaving examination, practically the whole form has to be promoted from one stage to the next, and the amount of work set for the form to master has to be small enough to be done by some of the more stupid boys in the given time. The inevitable result is that the ablest boys mark time from first to last throughout their school career. They have a year to do work which they could do in half the time, so that their powers are never developed by sustained or strenuous effort.

Individual excellence is sacrificed in yet another way, according to the second guiding principle of secondary education stated above. Since all subjects are done in form a particular aptitude for a special subject is never developed at school. Our best boys in any given subject attain a far higher standard before they leave school than is possible in Germany. Yet by preventing the possibility of specialisation at school the German system ensures for every boy a sound general education. Every boy is compelled to take all subjects prescribed by the syllabus of his school. Only recently and in isolated cases has this rule been remitted in the highest forms by way of experiment.

At the university all this is changed. There is no prescribed course of studies of any kind, and no compulsory attendance. The German student enjoys almost complete liberty, both as regards his studies and his behaviour. Yet in the majority of cases he makes good use of his time; partly because his allowance will not admit of any vast extravagance, partly because his position in life frequently depends upon his passing the final examination, but chiefly, I think, because those Germans who go to the universities do so, for the most part, because they have pronounced and genuine intellectual interests. The freedom which they are allowed in the choice of their subjects, and the general lack of supervision and of interim examinations, react favourably upon the results of their work. They carry into life an active interest in some branch of knowledge, which they frequently pursue as long as they live. This is particularly helpful to those who become schoolmasters. They show constantly in their teaching that they are drawing from no stagnant pool of knowledge acquired in the past, but from an ever-flowing and increasing stream, incessantly fed by the fresh work of contemporary scholars.

On turning to France we find, in a minor degree, two of the prominent characteristics which we noted in German education, first, a profound sense of the unique importance of education, and a serious effort in recent years to improve the existing system; secondly, that genuine intellectual interest which is imparted to pupils in the secondary schools. Both these characteristics augur well for the future. For there are many highly qualified teachers in France; and the professeurs agrégés of the lycées are well-educated and competent men, who are warmly attached to their studies, and are given ample time to pursue them.

Secondary education comprises the lycées established by the State in conjunction with the municipalities, and the collèges established by the *communities*. Under recent regulations the collèges are assuming more and more the character of local high schools similar to the higher primary schools, so that there may be some

danger of overlapping. In 1908 there were 111 lycées for boys and 229 communal colleges, having a total registration of 96,289 students, as against 96,462 in 1907, a slight falling off, in spite of every effort made by the Government to attract to these schools the most promising youths of the nation and to surround them with influences that shall insure their devotion to the Republic. Following a preparatory course of two years the lycée course proper is divided into two cycles. The lower cycle covers four years and comprises a classical course and a non-classical course; the upper cycle comprises three years. The programme for the first two of the three years is arranged in four parallel courses, as follows: A. classical course; B. Latin and modern languages; C. Latin and sciences; D. Sciences and modern languages. Following these two years is the class of philosophy and mathematics, each side comprising a classical and a non-classical section. The bachelor's diploma is awarded to students who complete either of the full secondary courses of instruction and pass the degree examination.

The establishment and progress of public secondary schools for girls are among the most important achievements of the Republic since 1880; there are now about fifty lycées for girls with 17,000 pupils, and sixty-one communal colleges with 10,000 pupils. On this branch of education the Government expended in 1908 a sum of over three million francs, including the cost of the training college at Sèvres for women teachers in these schools.

Impartial judgment of the French system of education reveals a great deal that is excellent, especially in secondary schools and at the universities. The progress made since 1872 is very considerable, though much yet remains to be done. The most prominent defects seem to be the great disparity in the teaching staffs at the lycées, the absence of any training in self-reliance and responsibility, the lack of freedom, and the over-centralised administration.

If the study of educational systems prevailing abroad is of special interest to us at the present time, it is because England's attention has been attracted by the commercial and industrial success of other nations which have long since held the conviction expressed by Signor Luzzatti at the scientific congress at Padua in September last, in these words: "The fate of nations is nowadays decided in their secondary schools."

My hope is that England may evolve a system of national education such as the world has not yet seen. We have the best raw material, we have the means, and if we have the will, I see no reason why this should not be accomplished even now, though we have started late.

I will now try to give a short outline of what I consider should be the most salient points of our system.

The most important point of all is the personality of the teacher. France and Germany have largely got the right men; we have not. The only way to attract suitable men to the teaching profession is to pay them liberally. Most of our headmasters have nothing to complain of in this respect, but the assistant-masters as a body have. If they are to be of the same standard in scholarship, character, and other necessary qualities as in France and Germany, their salaries must range from £150 to £600 per annum with a pension. Nothing short of this will furnish a sufficient properly qualified supply.

The schools we require are (1) an elementary school with a modest and simple curriculum; (2) a municipal or county secondary school of the type of the German Realschule with leaving age sixteen, in which French, German, and English, elementary mathematics, and elementary science form the staple of education; (3) a modern school with leaving age nineteen, in which the same subjects are taught, but carried further, and in which Latin should be an alternative to one of the foreign languages; (4) a classical school, in which Greek, Latin, and English form the backbone of the teaching, and mathematics, science, French, and German hold a subordinate place. This type of school would naturally be one for the abler boys, for they alone can reap the full benefit of such a wide course, but I am convinced that they can cope with it successfully; those who cannot do so should be rigidly kept out of it. Boys of the modern and the classical school should be admitted to the universities after having passed through the top form and after passing a leaving certificate examination in the subjects of their curriculum. Scholars from the elementary school should pass on to the municipal or county or modern school at the age of ten, and there should be attached to the elementary school a technical or industrial department for boys who are apprenticed to a trade, which they should attend for two years—from fourteen to sixteen—as part of their period of apprenticeship. Such a school has recently been opened by the London County Council as a day technical school for boys in book production (printing, bookbinding, &c.). A similar department might be attached to municipal or county schools for boys from sixteen to eighteen, in which, according to the locality—agricultural, commercial, or industrial subjects of a practical nature should be taught.

If education is to produce the best results, it must be independent of finance to this extent, that the headmaster's income should not rise and fall with the number of the pupils that are in his school.

Likewise, if education is to fulfil its mission fully, it is necessary that the central authority should keep in touch with the schools, not only through its inspectors, but also by means of consultations with the head- and assistant-masters, by conferences of representatives of the various interests involved and departments concerned, and that the local authorities should be freed from political influences, and enforced by expert opinion.

Lastly, it is of great importance that parents,

teachers, and authorities alike, while encouraging everything that contributes to the corporate life of a school, and in this I include athletic games and sports, should use their influence to keep these things in their proper place, for their predominance in a school is a deadly enemy to the estimation in which intellectual distinction, industry, perseverance in study and scholarship are held.

You may think that these ideas are Utopian. I do not; in fact, I am convinced that if the nation has the will, the authorities will find the way, and, though it be a costly enterprise, I venture to say that England never made a better investment, not even in Dreadnoughts.

"Caveant consules ne quid detrimenti capiat res publica."

THE FUNDAMENTAL PRINCIPLES OF THE TEACHING OF NUMBER.[1]

By T. RAYMONT, M.A.

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I SHALL try to furnish answers to four perfectly definite questions, which I will state without delay, and, if possible, in quite unmistakable terms.

(1) What is, or what should be, our *aim* in teaching the elements of number at all?

(2) What do we mean by those fundamental processes which we call *counting* and *measuring*, and why do we regard them as fundamental?

(3) What are the *first steps* by which a normal child, naturally and apart from what the school may do, begins to comprehend these fundamental processes?

(4) By what *method* should the teacher of young children seek to lead them on from those first faltering steps to a firm and steady tread wherever numbers are concerned?

(1) First, then, what are we, or what should we be, driving at, in teaching number at all? Let me beg you to dismiss from your minds any notion that may lurk there that this inquiry is superfluous. On the contrary, it is certainly true that if we insistently kept this kind of question before us, regarding every subject we teach, our teaching would soon be revolutionised from end to end. Now the object of all our teaching should be to enable the child to comprehend some part of his material and social surroundings, with a view to the efficient conduct of his daily life. And one aspect of those surroundings which presses upon our attention every hour of the day is the quantitative. We are continually confronted with the question—How much? How much of this article do I want to buy? How much, of money or of goods, am I to give in exchange for it? How much is the distance from here to there? How much time must be occupied in getting there? But we need to be more definite than this, and so the question "How much?" leads straight to the question "How many?" How many ounces or pounds of this stuff do I want? How many pence or shillings should I give for it? And so on. In other words, we need for our practical purposes to give numerical definiteness to certain items of our experience, and it is for this reason that we want a knowledge of number. Leaving aside the requirements of special trades and professions, which must be specially provided for, what the ordinary citizen needs, and what the elementary school should therefore keep in view, is the ability to add, subtract, multiply, and divide, in whole numbers and in easy fractions, and to apply these processes intelligently and rapidly to subjects that fall within the range of his experience at any given period of life.

Observe, for instance, that when a boy is being taught stocks and shares, he is not, properly speaking, being taught arithmetic at all; he is being required to apply his arithmetic to something that he probably does not understand, because it falls outside the range of his experience; whereas he ought to be applying his knowledge to something that he does understand. Observe also that when the boy is required to solve complicated fractional expressions, or to reckon the results of enormous commercial transactions (though he would probably be "floored" if asked to say quickly what is the interest on a few pounds in the post office), or to calculate within the eleventh part of a minute the time at which the hands of a watch are at right angles between two and three o'clock—he is simply being required to waste his time, or at best to spend it upon mathematical luxuries and recreations which might well be replaced by something more useful and necessary.

(2) I pass to my second topic—the meaning of the fundamental processes known as counting and measuring. It might be expected that I should attempt to unfold the meaning of *number* itself, but this is an extremely difficult matter, and is fortunately of no practical consequence for us, so that we can well afford to pass it by. Some of the text-book writers who attempt a definition make a sad mess of it. The wisest of them are silent on the point. But we must be clear as to what we mean by *equal numbers*. Suppose I have two groups of objects, say a row of noughts and a row of crosses, and I find that I can bring the things in the one group into a relation of one-to-one correspondence with the things in the other group, one nought to one cross, none being left over, then I say that the two groups of objects are equal in number. So the sight of a troop of cavalry, just one man to one horse, might suggest even to the mind of a child or a savage a vague notion of equal numbers. Now let us take a further step. There is one group of objects which has acquired for us a special significance—I mean the series of words one, two, three, &c., or the corresponding figures 1, 2, 3, &c.—and our knowledge of it such that when we hear the name

[1] From an address to the London County Council Conference of Teachers n January 7th, 1910.

of any member of the series we fix it in its place; *e.g.*, we think of 7 as coming immediately after 6 and immediately before 8. Now *counting* a group of objects simply means bringing it into a relation of one-to-one correspondence with some part of this series of words, and inferring from the last word we use what is the number of the group. This process of counting is fundamental, for addition is but a shortened form of counting, subtraction is the inverse of addition, multiplication is a shortened form of addition, and division is the inverse of multiplication.

Next, a word as to *measuring*—a process which good teachers of young children rightly regard as highly important. If I want to define numerically a group of objects—say, of bricks, or marbles—a unit naturally and obviously presents itself; it is a distinct object, a brick or a marble. But suppose I wish to give numerical definiteness to some continuous quantity, say the length of a room. In this case I have to invent or adopt an artificial unit, say a foot-rule or a yard-stick. I count off with this the number of times the length of the room contains the selected unit, and I am said to measure the length of the room. You will observe that counting and measuring involve each other, whether I am dealing with a continuous quantity or with a group of separate objects. When I count I measure, and when I measure I count. The difference between the two cases is that in the one the unit naturally suggests itself, whereas in the other it is artificially determined. It seems quite clear, therefore, that, in teaching young children, counting groups of objects should have decided precedence of measuring continuous quantities, whatever certain writers may say in favour of teaching both together.

(3) My third question is more difficult. How do these ideas begin to take shape in a young child's mind, even before he is taught number at school? What is there for the teacher to build upon when the child begins to be taught number? Among the child's earliest experiences are those of groups of similar objects, such as his brothers and sisters, his school-fellows, his kindergarten bricks, and his toy-soldiers. Another class of experiences, important for our present purpose, are those of a regular succession of sights or sounds or movements—such experiences as are gained in walking, or in listening to the ticking of a clock. To these experiences the child soon begins, by a process of spontaneous imitation, to attach the words one, two, three, &c.; but he does this in a wild sort of way. You may hear an enterprising child of three descending a staircase, clutching the banisters, and saying as he goes, "One, two, fee, six, eleven, &c." He may even get the words in the right order up to five, or far beyond, and if so, the fond mother says that her Johnny can count up to five, or ten, or twenty, as the case may be. I grieve to state, however, that in any genuine and intelligible sense of the term, Johnny is probably quite unable to count at all. Instead of saying "One, two, three, four, five," he might just as well say "Fa, fe, fi, fo, fum," and the result would be exactly the same. He has a vague notion of groups of like objects, or a succession of like experiences, and he has a vague notion that the words one, two, three, have something to do with the matter. He cannot count, but, as the children say in their games, he is "getting warm." He is on the road which leads to genuine counting, and has arrived at the stage which we may call *spurious counting*. Now, if I may so express myself, this is just where you come in. This is the point at which number-teaching naturally begins, and you waste your time, even if you do nothing worse, when you try to begin it earlier.

(4) This leads me to my fourth question, which refers to the methods, suggested by these considerations, of teaching the earlier stages of arithmetic. You will first be occupied in teaching the children to count intelligently. You will probably find that most of them, even when they can "count" in the ordinary sense of the term, confuse cardinal and ordinal numbers, calling the third object "three," the fourth "four," and so on. Your first care, therefore, will be to teach them to apply the word "two" to a group of two objects, the word "three" to a group of three, and so on. In this you will be helped at first by the fact that we can all recognise at a glance, *i.e.*, intuitively, groups of two, three, or four objects, without taking the trouble to count them, and that children can easily be taught to do so. Let me caution you against beginning with "one," notwithstanding the advice given by the advocates of a certain system to begin by "driving home the notion of unity." In a sense there is really no such number as "one." When I say "one," I simply settle what my unit shall be, and the notion of number does not arise until I come to "two."[1] Two, three, and four can be readily taught by various arrangements of dots, or by other such means. In order that groups of objects numbering 5, 6, 7, 8, 9, 10, may be grasped intuitively, they must be specially arranged like the pips on playing cards or dominoes.

But along with this teaching of counting, there will go the teaching of the relations between these numbers. Suppose that the children have learnt to recognise groups of two, three, four, and five objects, and that you wish them to learn that $2+1=3$, $2+2=4$, $3+1=4$, &c. To expect a child to pass from the notion of three and one to the notion of four, or from the notion of three and two to the notion of five, would be like expecting him to predict that blue mixed with yellow will give green. If you want him to understand the relation $3+2=5$, you must begin with the 5-group, separate it into a 2-group and a 3-group, all of which the child can recognise as such, and the relation $3+2=5$ will at once emerge. This process of "parting and wholing" is of the utmost importance in early number lessons.

[1] For a confirmation of this see Sigwart's "Logic," vol. ii., p. 37.

Along with these counting exercises on the first few numbers, but lagging a little behind them, will go simple exercises in measuring, including weighing, so that the children would, as the mathematician might express it, become accustomed to the numerical definition of continuous as well as of discrete quantity. Writing down the results of these experiences in figures is entirely an after-thought, just as the reading and writing of ordinary language come after the child has learnt to speak. The practice of writing the results should certainly follow after the attainment of facility in perceiving simple numerical relations, but not too long after, because writing helps to fix the results in the memory. What you must strenuously guard against is the supposition that because the child can reel off such statements as "three and two make five," and write down the figures, he *necessarily* knows anything at all about number.

You may next desire to introduce the system of numeration by tens. Here it is more important than ever that plenty of practical exercises should precede the writing of the figures. You might do much worse than let the children learn the system as the human race has learnt it. "A single illustration may be given which typifies all practical methods of numeration. More than a century ago travellers in Madagascar observed a curious but simple mode of ascertaining the number of soldiers in an army. Each soldier was made to go through a passage in the presence of the principal chiefs; and as he went through, a pebble was dropped on the ground. This continued until a heap of ten was obtained, when one was set aside and a new heap begun. Upon the completion of ten heaps, a pebble was set aside to indicate 100, and so on until the entire army had been numbered." [1] You might very well copy this method as it stands. A few dozen kindergarten bricks or counters, or even the children themselves, might be your army, which you might cause to pass one by one through a narrow space. You would avoid the use of the words twenty, thirty, &c., for some time, speaking rather of two-tens, three-tens, &c.; and you would, as I have said, regard the writing of the numbers as entirely an after-thought.

I have now perhaps said enough to exhibit in a general way the principles on which early number teaching should be based, leaving to others such topics as the specific devices to be employed, and the relative places of incidental and formal teaching. Time does not allow me to review the contributions of Pestalozzi, Tillich, Grübe, McLellan and Dewey, Speer, D. E. Smith, and others to the problem before us. I will only say that Tillich's bricks seem to me a useful contrivance, but that I should not follow Tillich's advice to adhere exclusively to that one mode of illustration. Also that the advocates of Grübe's system are entirely wrong when they recommend you to begin with unity, and when they recommend you to "do all that can be done," say, with 7, before you do *anything* with the much more promising 8; or "all that can be done with" 11 before 12 is considered at all.

Of the later teaching this is not the time to speak at length. But I should like to express my conviction that if we could throw out of the arithmetic course all that is unpractical or merely ornamental; if we could delete the whole array of complicated fractional expressions, train sums, clock sums, stream and race sums, and commercial rules that must be unreal to a child; and if we confined ourselves to the essential principles of number, with quick and accurate calculations about matters in which children are really interested, a large part of the time now given to arithmetic in the elementary school might be saved, and devoted to far more useful purposes.

[1] Conant, "The Number Concept," pp. 8-9; quoted from Dean Peacock, who quotes from a French writer on Madagascar.

SELF-HELP IN SCHOOLS.[1]

By W. B. STEER,
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I PROPOSE to offer some practical suggestions which are the outcome of a twenty years' experience with classes large and small in various types of schools. In doing so, I choose deliberately to pay most attention to the ordinary subjects of the school curriculum and to ignore entirely such subjects as drawing, manual training, "varied occupations," brush work, and even penmanship, in which it is obvious that all the work will be done by the pupil himself, if done at all.

I shall confine nearly the whole of my attention to the three R's, and endeavour to show how much can be done to make them effective means to develop the confidence of the pupil in his own mental powers.

First, then, with regard to reading, a subject in which I believe we have missed the right path to a much greater extent than in any other. The attitude of teachers and inspectors has, in the last three or four years, undergone very considerable change; but we still seem to be fettered by the old idea that children shall be able to stand up and say one word after another out of a book. To secure this with some show of expression, recourse was had to the wonderful time-saving plan of simultaneous reading, until it was discovered that one bell wether could lead a whole flock, and that the apparent intelligence was imitative rather than real. Simultaneous reading has now lost its advocates, and been relegated to the limbo of things weighed in the balances and found wanting; yet, still in modern text-books on the art of teaching, the various methods of teaching reading all narrow down this important subject to the art of reading aloud. Methods are "phonic," "look and say," and what not, and in past years when it has been my duty to prepare teachers for their certificate examina-

[1] From a paper read at the North of England Education Conference, Leeds, on January 7th, 1910.

tion, I have dilated on the merits of these various systems of teaching reading. The character of the preceding year's questions, and my desire that my pupils should pass the examination are my sole excuses for failing to point out that the word "oral" had in somebody's ignorance been omitted.

I do not decry the art of reading aloud. But the study of the art of reading aloud was, and is still, pursued to the exclusion of the more important art of reading to one's self. The old test still remains: "Can the child read?" Let us *hear* him. So the tiny child in the infant school has a volume of Shakespeare's plays put into his hands, and reads at first sight "The quality of mercy is not strained"; another reads from a scientific journal how a snowflake is adorned with "symmetrical featherings of a microscopical character"; and the headmistress exultantly demands my adhesion to the phonic system! But, on examination, what falsity of aim is therein displayed; what irreparable loss of time has taken place to secure the wonderful result; for reading is eventually to be a silent process, and the main aim of the reading lesson should surely be to cultivate the power to read to one's self and think.

When Philip of old time approached the dark-skinned Ethiopian in his chariot and asked him, "Understandest thou what thou readest?" he was far in advance of some twentieth-century educationists, and the fair show of reading which has often received inspectorial commendation would rarely stand Philip's searching test. If reading is to be well taught it must be largely silent, and should be followed not by the test of "oral reading" by individual pupils, but by the test of keen questioning upon the subject-matter which the pupils have read.

I make bold, therefore, to suggest that reading should once more be raised to the position of a subject of first-rate importance, that oral reading should be not quite, but nearly, abolished, that silent reading should take its place, that it should be followed by keen questioning and occasionally by a written test, and that when next the inspector asks for the syllabuses in history, geography, &c., he should have handed to him the adopted readers in those subjects instead.

Boys so trained will leave school with a zest for knowledge, and what is more important still, they will have the means in their hands by which that knowledge may be acquired.

In the matter of writing there remains very little to say beyond this, that Bacon's dictum that "Reading maketh a full man, and writing an exact man," was abundantly proved. Exercises in composition should, indeed, keep the aim of exact knowledge ever in view, and no child should be asked to write an essay on any topic unless and until he has had opportunities of making himself familiar with it. The subjects of the reading lesson should be utilised for composition exercises, with the occasional variation of allowing the pupils to make their own choice of a subject. But, however the choice of a subject is made, it is necessary that the individuality of the child shall be allowed the fullest play in its treatment.

I am given to understand that the problem of composition in primary schools is an exceedingly difficult one, and that much of the difficulty arises from the time required for marking the exercises and then seeing that the corrections are properly noted by the pupils. There seems no reason why a magazine should not greatly relieve the difficulty; for the exercise books, separate sheets must be substituted, a committee of the best boys may readily be trained to accept or decline any essay submitted, and the desire to see one's own work in the complete number will prove a natural incentive to produce something that is really good. I assume, of course, that such a magazine will circulate among all contributors at least, and, as sketches done at home may be included with advantage, the interest and co-operation of the parents will be secured. By some such means our pupils may be encouraged to take delight in their own work for work's sake, and that "infinite capacity for taking pains," which in these modern days is becoming more important than genius, be secured.

The question of arithmetic now calls for consideration, and though it offers particular opportunities for the self-effort of the pupils I find it very difficult to put my position clearly without running risks of closing this paper as a mere talk on school method. I may perhaps avoid that tendency by saying that, in my judgment, there is no subject where the folly of keeping the class together is more apparent and its effect more prejudicial. Given a good text-book, with its examples well graduated in difficulty, there is no reason why the pace of the child should not be governed by his capacity. I come daily into contact with this problem, and, for purposes of illustration, will take a class of thirty boys coming directly from primary schools, and constituting the lowest form in a secondary school. They come, widely divergent in ability and in method, and the first term is, of necessity, largely occupied in revisional work. The majority of text-books prepared for secondary school use recognise this need, and the earlier exercises are based upon the simpler arithmetical processes. My plan is to set the whole class at work upon these early exercises, and to encourage each boy to go ahead as fast as he can. Each boy brings each sum to me as soon as he has done it. If it is right, he proceeds to the next; if it is wrong, he does it again, and is not allowed to do No. 2 until No. 1 is right. In a very short time the smart boy is at No. 10 while the duller boys are still floundering with No. 1. This divergence soons puts me into the position of showing the actual mistake in No. 1, and so helping the weaker pupils over their difficulties, while the smarter boys soon realise that they have to tackle their difficulties themselves. Occasionally it happens that one particular sum is a general stumbling-block, and then all who have failed to reach it are gathered round the

board for class teaching of the difficulty, the remainder being permitted to go on with their work at the later stage. Individual effort is thus secured throughout the form, and the work proceeds until one boy has completed the exercise. The discretion of the teacher must then be exercised as to whether the whole class shall then turn to the next exercise, or whether the successful boy shall be set to some more difficult work—the miscellaneous exercises at the end of the book often offering scope for his greater ability.

The same plan is followed in higher forms, and as term marks are taken into account in assessing the order of merit at the end of the term, together with an examination on the work which all have done, there is little difficulty in securing the utmost effort from each boy. Algebra is treated in the same way, but as this is a new subject to all the boys, there is much less divergence here.

Mental work is encouraged so far as possible, and with the veto of bits of paper or figuring on the desk, boys soon take pride in arriving at their results with the least possible number of figures. To increase this facility with figures, I have found it a good plan to take the ordinary sums, and allow the class to solve them mentally, each step, when necessary, being recorded on the board. Often, no more can be done than to decide between what limits the answer must come. As a case in point, I find no difficulty in getting boys to reply that the product of 5,479 and 6,856 will lie between 30 and 42 millions, and that the two right-hand figures will be 24. Opportunities for similar mental effort abound in every lesson, and are too valuable to be ignored.

THE TRAINING OF TEACHERS OF DOMESTIC ECONOMY.[1]

By MABEL ATKINSON, M.A.
King's College.

THERE are three principles which should never be lost sight of in determining the place of domestic economy in education. First we should realise that much of the work of the housewife is really as much a specialised industry as is cabinet-making or engineering. We know quite well that it is absurd to expect to make skilled carpenters or fitters of little boys of eleven or twelve in the elementary schools. Equally absurd is it to endeavour to make skilled cooks or laundresses out of little girls of the same age. But what we can do is so to adjust all the work in science and in handicrafts as to show its bearing on domestic economy, and to supplement this by a simple training in the easier domestic operations which should be known to every woman and, indeed, to every man.

In the elementary school I would incorporate some instruction in hygiene, and no child should leave it without knowing how to lay and light a fire, the reasons for and the best ways of dusting, sweeping and scrubbing, how to boil an egg, grill a steak or chop, boil potatoes and make a milk pudding, darn a stocking or sew on a button. I would not even attempt, unless the school age is considerably raised, to teach, for example, the making of cakes and puddings, the cutting out and fitting of blouses, the ways to clean white paint, or the methods of taking stains out of soiled clothes. Many of these operations are only performed by experts, and to endeavour to teach them to every little elementary-school girl is both unnecessary and doomed to failure. We ought, I think, to draw in domestic economy a very sharp line between the minimum of hygienic knowledge and domestic skill, which should form a part of the education of everyone, and the specialised science and technique to be demanded of those who propose to be experts in the subject. But, for both classes alike, instruction and practice in domestic economy should be kept in the closest relation to the study of science generally.

That is the reason why we hold that domestic economy, instead of being relegated to special schools, should be taught in the university. "Science" of a kind is at present part of the curriculum of the schools of cookery, but it is taught as a general rule in a mechanical and unintelligent fashion out of little text-books, the statements of which are swallowed without real comprehension both by students and teachers. To the best of my knowledge, only one school of cookery has a woman with a degree in science on its staff. Now, this is absurd. The science which must be applied in cooking and laundry work is not easy or elementary. It is related, for instance, to advanced organic chemistry. The students who intend to specialise, either in the practice or in the teaching of domestic economy, should be taught a real and not a sham science. There is no reason why their preliminary studies in physics, chemistry and physiology or economics should not be carried on in the university or training school with the mass of other students. Some of the courses might demand a little modification. But, speaking for my own subject, I find that if students are to comprehend the economic forces acting on the household, determining, for example, the conditions of the building trade and therefore the character of the houses built, a proper training in general economics and economic history is essential. I imagine the same will be true of other subjects.

Precisely as students of engineering and of medicine may do their first year's work in chemistry and physics together, so should students of domestic economy take ordinary classes in the university during the first year, and only in some subjects and in the concluding years' work proceed to specialise. With these considerations in our minds, we cannot but be dissatisfied with the isolated position held by domestic economy in our present system of education. Cookery and cleaning in the elementary schools are taught only to selected classes, and to those not as part of the regular school work, but in separate centres.

[1] From a paper read at the North of England Education Conference, Leeds, on January 8th, 1910.

The subject is almost unknown in most secondary schools, while the position of the schools of cookery is worst of all. They devote themselves mostly to training teachers, but they have laid far too much stress on the attainment of a stereotyped level of mechanical skill, and far too little to the general development of intelligence. Their students have to work in elementary schools, and there is no reason why they should not attend at least some lectures and some criticism lessons with the King's scholars who are afterwards to be their colleagues.

There are other anomalies in the position of the domestic training schools. The very low standard of general education required at admission is, perhaps, partly to be explained by the fact that the heavy fees must be paid by the students themselves, which is a curious contrast to the free places and maintenance scholarships provided for other teachers in training. The Government gives a small grant towards the upkeep of the schools, but in return for this makes very drastic regulations.

PERSONAL PARAGRAPHS.

THERE first claim our attention the names of two men who, though they spent the later years of their lives in the work of the Church, in earlier days did good work as secondary-school masters. The Right Rev. Dr. William Awdry died on January 4th. He was educated at Winchester under Dr. Moberly, and proceeded to Balliol College, where he took first classes in Mods. and Greats (1865). He won the Ellerton theological prize in 1867, after his election as a fellow and lecturer of Queen's College. After a short curacy at St. Peter-in-the-East, he returned as second master to Winchester, where his record as a scholar and an Oxford rowing blue stood him in good stead, and married (1868) a daughter of Dr. Moberly. After five years at Winchester he became headmaster of St. John's College, Hurstpierpoint, one of the three Woodard schools in Sussex. Bishop Durnford of Chichester made him principal of the college at Chichester and canon of the Cathedral.

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The Rev. Charles Tabor Ackland died on January 1st at the age of seventy-nine. He had for some years retired from active work. In 1857 he became an assistant-master at Kensington Grammar School, of which Dr. Haig Brown was elected headmaster in the same year. While teaching he read for a Dublin degree, and graduated from Trinity College in 1859. Haig Brown having left for Charterhouse in 1863, Mr. Ackland was appointed headmaster in 1869, and served in that office for twelve years. From the school he was appointed to the vicarage of St. Anne, Brookfield, at the foot of Highgate Hill.

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Few secondary-school masters have not in some way or other been brought into contact with the school books of Prof. A. L. Meissner. Personally, it was my lot for some ten years to teach German out of his excellent German Grammar. For many years he occupied the chair of modern languages in Queen's College, Belfast, to which he was appointed in 1865. He retired in 1902.

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Onlooker's age begins to feel respectable when one who was a year his junior at Oxford is appointed to the Vinerian professorship of English law. Mr. William M. Geldart was elected to the professorship to succeed Prof. Dicey. He gained a scholarship at Balliol in 1888 from St. Paul's School, the senior Balliol of the year before having fallen to another Pauline, Mr. R. J. Walker, the son of the great headmaster of St. Paul's. It would be long to tell of the successes of Mr. Geldart's brilliant university career. After being called to the bar by Lincoln's Inn in 1897, he returned to Oxford in 1901 as fellow and lecturer in law at Trinity College. In 1906 he was elected All Souls Reader in English law. He is one of the collaborators of "A Digest of English Civil Law.

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St. Hilda's Hall, Oxford, is to have a change of principal next summer, when Mrs. Burrows, who has been principal since the foundation of the Hall, will resign. She will be succeeded by her daughter, Miss Christine Burrows, who was a pupil at the Ladies' College, Cheltenham, and a student at Lady Margaret and St. Hilda's Halls. At the latter she has been tutor in modern history, and has also served on the staff of the Association for the Education of Women in Oxford. She is president of the St. Hilda's Old Students' Association.

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A few months ago, if I remember rightly, an appeal was being made for funds for Girton College, Cambridge. A very fortunate windfall, therefore, is the legacy of Miss Mary Higgens, of Bromley, Kent, who died last November. She left some £13,000 to the college for the foundation of scholarships of an annual value of £40 each, to be known as the "Higgens" scholarships. This munificent benefaction should go a long way towards bringing the benefits of Girton more within reach of deserving pupils at girls' secondary schools. It would appear that next March, when the entrance examinations are held, some two dozen extra exhibitions will be awarded. The fees being over £100 a year, possibly a few exhibitions of £80 a year would serve a useful purpose.

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Mr. Fred Charles, who is this year's chairman of the Assistant-masters' Association, was not educated at a public school, or at either of the older universities, but at Weston-super-Mare and London University. He has been a master at the King's College Strand School since 1894. He is a keen man, and it may be wished that a far larger proportion of teachers who boast themselves public-school and Oxford and Cambridge men were as useful to the teaching profession as

Mr. Charles. He was treasurer of the association in 1902–3, and was allowed by a wise school management to spend some months in America to freshen up his educational ideas and ideals. It must be gratifying to his governing body to see this leave bearing good fruit, both in Mr. Charles's chairmanship and also in the excellent report on "Conditions of Service of Teachers in England and Abroad." In this volume, published by the A.M.A., Mr. Charles is responsible for the pages on America, and also for the general editing and publishing arrangements. Public-school masters who have not yet joined the ranks of an association which is the most representative association existing for the improvement of secondary education might well take a leaf out of Mr. Charles's book.

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MR. PHILIP WOOD, who is this year's president of the Incorporated Association of Headmasters, graduated at Edinburgh University, had experience at Merchiston Castle School, and has been headmaster of Darlington Grammar School since 1877. This is a long record of headmastering. He has been a keen member of the association over which he now presides. In his address he had something to the point to urge about the free-place system in secondary schools, and welcomed the near prospect of professional registration for teachers. ONLOOKER.

THE INTERIM REPORT OF THE JOINT COMMITTEE ON GRAMMATICAL TERMINOLOGY.

EVEN a cursory inspection of text-books in general use for the teaching of any particular language shows that there is considerable divergence of grammatical terminology. The divergence becomes still more noticeable when the books for the teaching of different languages are concerned. That this lack of uniformity is bewildering to the pupil and troublesome to the teacher has long been recognised, and an attempt to remedy it was made by the publication of the Parallel Grammar Series by Prof. Sonnenschein.

It is fitting that he should be the chairman of the joint committee that was appointed at the beginning of last year for the purpose of drawing up recommendations that should lead to simplification, and, so far as possible, uniformity of grammatical terminology in the case of the five languages usually taught in English schools. It was the Classical Association that invited the co-operation of seven other associations: the English Association, the Modern Language Association, the Headmasters' Association, the Headmistresses' Association, the Assistant-masters' Association, the Assistant-mistresses' Association, and the Association of Preparatory Schools. The eight associations nominated twenty-one representatives, and Dr. Henry Bradley and Miss Edith Hastings were subsequently co-opted.

The committee thus formed was an exceptionally strong one, and we understand that it has worked very harmoniously. It must certainly be conceded that the result of the first year's work is very satisfactory. We print below that part of the interim report which contains the committee's recommendations, and omit the introduction and an addendum.

The introduction gives some account of what led up to the formation of the committee, and refers to the interest which it has aroused abroad. A French committee, we learn, recently dealt with the same subject; but, for some reason or other, the representatives of foreign language teaching gradually fell off, until only those interested in the mother-tongue remained. These produced a report containing some interesting suggestions for the simplification of the terminology of French grammar only.

The addendum to the report is signed by ten members of the committee, and deals with the nomenclature of French personal pronouns. In the body of the report there is a suggestion that the terms *heavy* and *light* should be substituted for *disjunctive* and *conjunctive*; the addendum approves of the use of the suggested terms, but would apply them in quite a different sense from that in which *disjunctive* and *conjunctive* have hitherto been used. It may well be asked whether such a matter as the rewriting of a chapter in the grammar of one language is not outside the province of the committee. If it once undertakes work of this kind, there will be no end to its labours.

The recommendations are lucidly expressed and admirably illustrated by examples. It is not likely that they will escape criticism; indeed, the whole point of issuing an interim report is to invite criticism. The Modern Language Association and the Classical Association at their annual meetings expressed their approval of the report, and made very few suggestions or adverse criticisms; and the reception with which it has so far met will encourage the committee to continue its laborious task. In performing it, the committee will be grateful for help from all teachers. Mature consideration may lead to further criticism of the recommendations now put forward, and suggestions will also be welcomed that deal with problems of terminology not yet considered. These will include the terms to be employed in connection with the study of phonetics and of prosody.

We may be permitted to direct attention to some points which particularly deserve the consideration of our readers:

No. III.—Is *predicative* a good term for, *e.g.*, *happy* in *It made me happy* or *roi* in *On l'a élu roi?*

No. VII.—Is it desirable to discard the term Indirect Object?

No. X.—Is the subdivision of Subordinate Clauses into Noun Clauses, Adjective Clauses, Adverb Clauses, valuable?

No. XI.—Is a substitute for Phrase desirable? If so, what should be substituted?

No. XVII.—How are we to designate, *e.g.*, *him die* in *Who saw him die?*

No. XXIII.—What *are* the best terms to indicate the distinction mentioned in this recommendation? or is there no need for special terms at all?

No. XXIV.—Is the Note a convincing argument in favour of the Recommendation?

No. XXV.—Is it desirable to abandon the terms Conditional, Passé Défini, Pluperfect?

We would conclude by expressing our thanks to the joint committee for its work during the past year, and our hope that it may soon bring its labours to a satisfactory conclusion.

RECOMMENDATIONS.

The following are the recommendations at which the committee has up to the present arrived, accompanied, where necessary, by examples, and in some cases by brief comments, intended to explain the import of the recommendations. The corresponding German and French terms are given after each of the recommendations.

I. That the first stage of analysis of a sentence be a division into two parts, to be called the ***Subject*** and the *Predicate*, the *Subject* being the group of words or single word which denotes the person or thing of which the Predicate is said, and the *Predicate* being all that is said of the person or thing denoted by the Subject.

Subject *Subjekt* *Sujet*
Predicate *Prädikat* *Prédicat*

In the following examples the Predicate is distinguished from the Subject by the type:

The merciful man **is merciful to his beast.**
The man that hath no music in his soul **is fit for treasons, stratagems, and spoils.**
Consent thou **not.**
Long live the King!
How sweet the moonlight **sleeps upon this bank!**
Hätte ich **es doch nicht gesagt!**
Causa fuit pater **his.** (Horace, Sat. I. 6, 71.)
Cinq étrangers sur dix **savent notre langue.**
Τίς ἀγορεύειν βούλεται;

NOTE 1. Where the Subject, consisting of a group of words, needs to be distinguished from the Noun or Noun-equivalent around which the other words are grouped, the former may be described as the *Complete Subject* and the latter as the *Bare Subject.*

NOTE 2. In the usual sentence the Subject and the Predicate are fully expressed, but there are instances in which either the one or the other is only implied, wholly or in part.

Examples:
Come [you] *here.*
[I] *Thank you.*
What a beautiful night [it is]!
Who saw him die? *I* [saw him die], said the fly.
[I wish you] *Good morning.*
Diesen Kuss [gebe ich] *der ganzen Welt.*
Nugas [agis].
[Je vous demande] *mille pardons.*
Αἰδώς [ἔστω σοι or ὑμῖν].—**Μορμώ· δάκνει ἵππος.**

II. That the part of the Predicate which, taken in connection with the Verb, indicates what the person or thing denoted by the Subject is, or becomes, or is named, or seems, be called the *Predicative Adjective, Noun,* or *Pronoun.*

Predicative *Prädikativ* *Prédicatif*

Examples:
Be *quiet.*—He looked *healthy.*—I will live a *bachelor.*
Thou art the *man.*—Are you not *he?*
Der Himmel wurde *grau.*
Haec insula vocatur *Mona.*—*Nudus* ara, sere *nudus.*
Vous êtes *studieuses,* mesdemoiselles.—C'est *moi.*
Πολλῶν ὁ καιρὸς γίγνεται διδάσκαλος.—Ἀμ' οὗτός ἐστ' ἐκεῖνος;—Χαλεπὰ τὰ καλά.—Φαίνεται προδυὺς τὴν πόλιν.—Ὁ ποταμὸς ῥεῖ μέγας.—Πρῶτος πρυσβάλλει.

III. That the same terms be employed to denote the Adjective or Noun similarly used in relation to the Object or to any other part of the sentence.

Examples:
It made me *happy.*—Home they brought her warrior *dead.*
Man heisst den Löwen den *König* der Tiere.
Hanc insulam *Monam* vocant.—Caesar Helvetios *primos* debellavit.—*Soli* hoc contingit sapienti.
On l'a élu *roi.*
Νόμιζ' ἀδελφοὺς τοὺς ἀληθινοὺς φίλους.—Ἔλαβε τοῦτο δῶρον.

IV. That the term *attributive* be used to distinguish Adjectives and Nouns which qualify a Noun from Adjectives and Nouns which are predicative.

Attributive *Attributiv* *Attributif*

NOTE.—The term "Apposition" is here discarded, as unnecessary.

Examples:
the *almighty* dollar.
der *fliegende* Holländer.
populus *Romanus.*
la Rome *moderne.*
ἄνδρες Ἀθηναῖοι.
} (Attributive Adjectives)

Francis Bacon, *Lord Chancellor* of England.
Zu Dionys, dem *Tyrannen,* schlich Möros.
regina pecunia—urbs *Roma.*
Louis le *roi.*
ἄνδρες δικασταί.
} (Attributive Nouns)

V. That the term *Object* be used to denote the Noun or Noun-equivalent governed by a verb.

Object *Objekt* *Objet*

Examples:
I have finished *my course.*
Sie hat *einen andern* erwählt.
Longum iter confeci.
Je *les* connais.
Ἔλεγον τάδε.
He asked *me many questions.*
Er lehrte *mich die deutsche Sprache.*
Illud te rogo.
Βασιλεὺς ὑμᾶς τὰ ὅπλα ἀπαιτεῖ.
} (Two Objects)

VI. That the term *Adverbial Qualification* be used to denote the adverbial part of the Predicate, that is, the part which qualifies the Verb, being neither an Object nor a Predicative Noun, Adjective, or Pronoun.

Adverbial Qualification *Adverbiale Bestimmung*
Qualification Adverbiale

Examples:
Merrily, merrily shall I live *now*
Under the blossom that hangs on the bough.
So all day long the noise of battle rolled.
I sent a letter *to London.*—I sent a letter *to my friend.*
So muss der Freund *mir* erbleichen.
Romae habitat.
Il demeure *à Rome.*
Ἀθήνησιν (or **ἐν Ἀθήναις**) **οἰκεῖ.**

VII. That, as no special name is needed in analysis to describe the particular kind of Adverbial Qualification often called the Indirect Object, this term be discarded.

Example:
Amico meo epistulam misi. (Compare VI.)

VIII. (*a*) That all Sentences be divided into two classes, the first to be called *Simple,* the second *Complex.*

Sentence	*Satz*	*Phrase*
Simple Sentence	*Einfacher Satz*	*Phrase Simple* (*Proposition Simple* is sometimes used)
Complex Sentence	*Zusammengesetzter Satz*	*Phrase Complexe*

(*b*) That a Simple Sentence be defined as one which contains *no Subordinate Clause* (see X., below).

Subordinate as opposed to *Coordinate*	*Untergeordnet*	*Subordonné*
	Beigeordnet	*Coordonné*

Examples :

The quality of mercy is not strained.
Wer reitet so spät durch Nacht und Wind?
Dic, M. Tulli.
La haine est la colère des faibles.
Πάντα ῥεῖ. (Simple Sentences)

(*c*) That a Complex Sentence be defined as one which contains *one or more Subordinate Clauses*.

Examples :

He jests at scars *that never felt a wound*
Wer nie sein Brot mit Tränen ass . . .
Der kennt euch nicht, ihr himmlischen Mächte.
Dic mihi *quid feceris.*
Quand il reviendra, je le lui dirai.
Ἐὰν τοῦτο πράξῃ, κολασθήσ (Complex Sentences)

IX. That the terms *Double, Treble,* or *Multiple* be used in the description of a Sentence or any part of a Sentence which consists of two or more co-ordinate parts.

Double	*Doppelt*	*Double*
Double Sentence	*Doppelsatz*	*Phrase Double*
Double Subject	*Doppeltes Subjekt*	*Sujet Double*
&c.	&c.	&c.
Treble	*Dreifach*	*Triple*
Multiple	*Vielfach*	*Multiple*

The adoption of this recommendation renders unnecessary the term "Compound Sentence," which is sometimes used to denote a third class of sentence (in addition to the Simple Sentence and the Complex Sentence), but which is ambiguous, being often used to denote what is called a Complex Sentence above VIII. (*a*).

Examples :

God made the country and man made the town.
The tale is long, nor have I heard it out. (Double Sentence)

Wellington and Napoleon were great generals.
The buyer and the seller came to an understanding.
Der Kaiser und sein Feldherr entzweiten sich.
Ἡδονὴ καὶ λύπη ἐν τῇ πόλει βασιλεύσετον. (Double Subject)

Conticuere omnes *intentique ora tenebant.* (Double Predicate)

Après quoi, Jean { *entra dans la maison,* / *se débarrassa de son sabre,* / *remplaça son képi par un vieux chapeau* / *et s'en alla retrouver le curé.* } (Multiple Predicate)

Il *reprit et continua* sa vie d'autrefois. (Double Verb)

Lifeless but beautiful he lay.
Golden und rosig wehen Die Wolken drüber her. (Double Predicative Adjective)

That *good and great* man died a beggar. (Double Attribute)

Die Rose die Lilie, die Taube, die Sonne,
Die liebt' ich einst alle in Liebeswonne. (Multiple Object)

Of one who loved *not wisely but too well.* (Double Adverbial Qualification)

X. That a part of a sentence equivalent to a Noun, Adjective or Adverb, and having a Subject and a Predicate of its own, be called a *Noun Adjective* or *Adverb Clause*; and that that part of a Complex Sentence which is not subordinate be called the *Main Clause.*

Subordinate Clause	*Nebensatz*	*Proposition Subordonnée*
Main Clause	*Hauptsatz*	*Proposition Principale*

Examples :

I wandered lonely as a cloud
That floats on high o'er vales and hills. (Adjective Clause.)
Ehrt den König seine Würde, (Adverb Clause)
Ehret uns der Hände Fleiss.

That you have wronged me doth appear in this.
The proposal *that he should be appointed* was dropped.
Tell me *where is fancy bred.*
Tu ne quaesieris (scire nefas) *quem mihi, quem tibi, finem di dederint.*
Hac re homines bestiis praestant *quod loqui possunt.*
Je crois *qu'il vient.*
Τῷ φθόνῳ τοῦτο μόνον ἀγαθὸν πρόσεστι, ὅτι μέγιστον κακὸν τοῖς ἔχουσίν ἐστιν. (Noun Clauses)

NOTE.—The subdivision of Subordinate Clauses above indicated (into Noun Clauses, Adjective Clauses, Adverb Clauses) has not yet received the full consideration of the committee.

XI. That a part of a Sentence equivalent to a Noun, Adjective, or Adverb, but not having a Subject and a Predicate of its own, be called a *Noun, Adjective,* or *Adverb Phrase* (or some similar term).

Phrase	*Ausdruck*	*Locution*

NOTE.—If the term *Phrase* is thought objectionable in English owing to the use of the French term *Phrase* in an entirely different sense (="Sentence"), the committee suggests as a substitute in English the term *Expression* (*e.g., Adverbial Expression, Adjectival Expression* for *Adverb Phrase, Adjective Phrase*); if this is not thought satisfactory, the committee will be glad to receive other suggestions.

Examples :

I stood *on the bridge at midnight.* (Adverb Phrases.)
The clock *on the bridge* struck the hour. (Adjective Phrase.)
Unglücklicher Weise kann ich nicht da sein. (Adverb Phrase.)
Ein Jüngling *von edlem Gefühle.* (Adjective Phrase.)
Decem milia passuum profecti sunt. (Adverb Phrase.)
Tanta *in tanto viro* vitia referre pudet. (Adjective Phrase.)
Un bateau *à vapeur.* (Adjective Phrase.)
Οἱ στρατιῶται οἱ ἐν τῇ πόλει. (Adjective Phrase.)
Ἆρα μέμνησθε τῶν πάλαι; (Noun Phrase.)

XII. That the term *Noun* (not "Substantive") be used as the name of a part of speech.

XIII. That the following parts of speech be recognised : *Noun, Pronoun, Adjective, Verb, Adverb, Conjunction, Preposition.*

Noun	*Nomen*	*Nom*
Pronoun	*Pronomen*	*Pronom*
Adjective	*Adjektiv*	*Adjectif*
Verb	*Verb*	*Verbe*
Adverb	*Adverb*	*Adverbe*
Conjunction	*Konjunktion*	*Conjonction*
Preposition	*Präposition*	*Préposition*

NOTE.—The terms Article and Numeral should be used to designate, not separate parts of speech, but subdivisions of other parts of speech.

Article	*Artikel*	*Article*
Definite	*Bestimmt*	*Défini*
Indefinite	*Unbestimmt*	*Indéfini*
Numeral	*Numeral* (Plural *Numerale*) or *Zahlwort*	*Nombre* and *Numéral* (adj.)

XIV. (*a*) That the words "my," "thy," "her," "its," "our," "your," "their," and "his" in the corresponding use (*e.g.*, "his father"); "mein," "dein," "sein," "ihr," "unser," "euer," "Ihr"; "meus," "tuus," "suus," "noster," "vester"; "mon," "ton," "son," "notre," "votre," "leur"; ἐμός, σός, ἡμέτερος, ὑμέτερος be called *Possessive Adjectives.*

(*b*) That in their ordinary use English "hers," "ours," "yours," "theirs," and in the corresponding use "mine," "thine," "his" (*e.g.*, "This is *his*," "*His* is better than *hers*"), French "le mien," &c., German "der meinige," &c., be called *Possessive Pronouns.*

Possessive	*Possessiv*	*Possessif*

XV. That English "this" and "that" in their attributive use be called *Demonstrative Adjectives*, but in their non-attributive use be called *Demonstrative Pronouns.*

Demonstrative	*Demonstrativ*	*Démonstratif*

XVI. That the words "ipse," "selbst," "myself" (in the sense of "ipse"), "moi-même," &c., and αὐτός be called *Emphasising Adjectives* or *Pronouns.*

Emphasising	*Emphatisch* or *Betonend*	*Emphatique*

XVII. That the terms "Objective," "Possessive," and "Nominative of Address" as names of Cases in English be discarded, and that, so far as possible, the Latin names of the Cases be used.

Thus:

Instead of "Subjective" the term *Nominative* should be used.

Instead of "Nominative of Address" the term *Vocative* should be used.

Instead of "Objective" the two terms *Accusative* and *Dative* should be used.

Instead of "Possessive" the term *Genitive* should be used.

Examples:

I am; *thou* art; *he* is; &c. (Nominative)
Where art thou, *beam* of light? } (Vocative)
Good day, *Sir.* }
Who saw *him* die? (Accusative)
I saw Mark Antony offer *him* a crown. (Dative)
Caesar's trophies. }
Caesar's images. }
Caesar's murderers. } (Genitive)
A *stone's* throw. }
Tempe's classic vale. }

NOTE.—The term Case is necessary even for English Grammar by itself, in view of the surviving inflexions, especially in pronouns, and also because it is desirable for the learner to recognise the likeness of English, so far as it extends, to more highly inflected languages.

From this point of view the following statement may be made in regard to the Cases in English:

English, like German, has five Cases, viz., Nominative, Vocative, Accusative, Genitive, and Dative. In modern English some of the distinctions of form which originally existed have fallen away, but the differences of meaning are of great importance, as may be seen, for instance, in the double use of "him": *e.g.*, "I brought *him* here" (Accusative); "I brought *him* a present" (Dative). Moreover, the distinction between the Accusative and the Dative of Nouns in sentences which have both Cases is marked by the normal order of words (Dative before Accusative): *e.g.*, "I gave my son a present"; "It saved my father much trouble." See H. Sweet, "New English Grammar," Part II., §§ 1823, 1990; C. T. Onions, "Advanced English Syntax," § 103.

XVIII. That the same names of Cases be used also in French (cf. XXI.).

Case	*Kasus*	*Cas*
Nominative	*Nominativ*	*Nominatif*
Vocative	*Vocativ*	*Vocatif*
Accusative	*Akkusativ*	*Accusatif*
Genitive	*Genetiv*	*Génitif*
Dative	*Dativ*	*Datif*

Examples:

Nom. *Je* l'ai dit.—*Ich* habe es gesagt.
Voc. Vous avez tort, *mon ami*.—Sieh, *Herr*, den Ring.
Acc. Il *me* vit.—Er sah *mich*.
Gen. J'*en* ai quatre.—La maison *dont* j'ai la clef.—Der Schlüssel *des Hauses*.
Dat. Il *me* dit cela.—Er sagte es *mir*.

XIX. That in French and English the Case used after Prepositions be called the Accusative.

NOTE.—In French this recommendation can be justified not only by obvious convenience, but also historically, since in Vulgar Latin, both in inscriptions and in late writers, we find the Accusative replacing the Ablative after Prepositions (*Saturninus cum suos discentes*, at Pompeii even, *i.e.*, before A.D. 79: see Meyer-Lübke, "Grammaire Comparée des Langues Romanes," II., p. 29); and similarly in Byzantine Greek (from A.D. 600) and in vernacular modern Greek all Prepositions take the Accusative as their ordinary construction.

XX. That in Latin the names used for the Cases be as follows: *Nominative, Vocative, Accusative, Genitive, Dative, Ablative*; and that the term *Locative* be used to describe forms like "humi," "ruri," "Romae."

NOTE 1. The retention of the traditional names of the Cases in Greek and Latin to denote the particular categories of form is not inconsistent with the treatment of Cases like the Latin Ablative and the Greek Genitive as "syncretic" Cases (the Greek Genitive having absorbed the functions of the original Ablative, the Latin Ablative those of the original Instrumental and Sociative, and largely also those of the Locative).

Example:

Ὁ θάνατος ἐλευθεροῖ τὴν ψυχὴν τοῦ σώματος. (Genitive for original Ablative.)
Securi percussus est. (Ablative for original Instrumental.)
Eo anno interfectus est. (Ablative for original Locative.)

NOTE 2. The term *Instrumental* may be used, if it be found desirable, to describe the survival of this case in English in the form "the" ("the more the merrier"), and similarly to describe the German "desto."

XXI. That in German the traditional names of the Cases be retained in preference to the new terms "Wer-Fall," "Wen-Fall," "Wes-Fall" (or "Wessen-Fall"), "Wem-Fall."

XXII. That the order of the Cases (where found) be as follows: Nominative, Vocative, Accusative, Genitive, Dative, Ablative.

XXIII. That in the nomenclature of French Personal Pronouns the terms *Heavy* and *Light* are preferable to the terms "Disjunctive" and "Emphatic," "Conjunctive" and "Unemphatic" respectively.

Personal Pronoun	*Personalpronomen*	*Pronom personnel*
Heavy	*Schwer*	*Lourd*
Light	*Leicht*	*Léger*

(The terms *strong* and *weak* are undesirable because of their frequent use in totally different meanings; in the conjugation of verbs Eng. "took," Germ. "schrieb," Gr.

ἔλαβον, are often called strong tenses; and in German the adjective "gutes" in "gutes Tier" is often said to belong to the strong declension, and "gute" in "das gute Tier," as well as a large number of nouns [*e.g.*, "Knabe"], to belong to the weak declension.)

XXIV. That in English Grammar no Gender be recognised.

NOTE.—The objection to distinctions of gender in English is that they are (i) unnecessary and (ii) misleading. To call "father" masculine, "mother" feminine, "table" neuter, leads to nothing in English grammar; for, as there are no inflexions of gender in adjectives in modern English, there is no agreement of the adjective with its noun in gender; and further, to use the term masculine as denoting male, feminine as denoting female, and neuter as denoting neither male nor female is to adopt a false definition of the term gender. In Greek, Latin, French, and German there is only a partial identity between "masculine" and "male," "feminine" and "female," "neuter" and "neither male nor female"; nor is it true that the distinctions of gender in these languages are ultimately based upon distinctions of sex. For the results of modern research on this question see Brugmann, "Grundriss der vergleichenden Grammatik," 2nd edition, vol. ii., part 1, pp. 82–103, and the discussion of the question (in a review of the abridged edition of this book) by R. S. Conway, *Classical Review*, vol. xviii. (1904), p. 412. See also the brief statements relating to English nouns and pronouns in H. Sweet's "Primer of Historical English Grammar" (1902), § 231, and the "English Accidence" in the Parallel Grammar Series, by J. Hall and E. A. Sonnenschein (1889), § 49, § 74.

XXV. That the following scheme of names of Tenses of the Indicative be adopted.

In this scheme account is taken, not only of the relations of the tenses in the five languages to one another, but also of the needs of each language as taught separately. The verb "write" is taken as an example (third person singular).

ENGLISH.

writes	**Present**	*has written*	**Present Perfect**
will write	**Future**	*will have written*	**Future Perfect**
wrote	**Past**	*had written*	**Past Perfect**
would write	**Future in the past**	*would have written*	**Future Perfect in the past**

with special Continuous Forms of each (*is writing, will be writing, was writing, would be writing, has been writing*, &c.), which mark the action as *going on*. Verbs like "be," "love," "know," which denote a state as distinct from an act, have as a rule no special Continuous Forms.

The tense called Past has a double use, (i) as a Past Historic, *e.g.*, "On his arrival he wrote to me"; (ii) as a Past Continuous, marking the action as either *going on* or *habitual* in the past, *e.g.*, "He wrote while I read," "The poor soul sat sighing," "England loved Queen Victoria," "Milton wrote Latin verse."

The Future in the past and the Future Perfect in the past are seen in examples like "I thought that he would write," "I thought that he would have written before this."

GERMAN.

As English, except that German has no special Continuous Forms and no Future in the past or Future Perfect in the past (of the Indicative Mood).

schreibt	**Present**	*hat geschrieben*	**Perfect**
wird schreiben	**Future**	*wird geschrieben haben*	**Future Perfect**
schrieb	**Past**	*hatte geschrieben*	**Past Perfect**

The German Past has the same double use as the English Past: (i) as a Past Historic, *e.g.*, "Als er ankam, schrieb er an mich"; (ii) as a Past Continuous, marking the action as either *going on* or *habitual* in the past, *e.g.*, "Das Wasser rauscht' (=rauschte), das Wasser schwoll, ein Fischer sass daran" (Goethe); "Goethe schrieb Balladen."

The German tense that corresponds to the English Present Perfect is used (i) as a Present Perfect, *e.g.*, "Er hat schon an mich geschrieben," "Ich habe geliebt und gelebet"; (ii) colloquially as a Past Historic, *e.g.*, "Nach seiner Ankunft hat er an mich geschrieben." Hence this tense is called simply "Perfect," in order to distinguish it from the English "Present Perfect."

The forms *würde schreiben, würde geschrieben haben*, have the same functions as the Future in the past and the Future Perfect in the past of English and French, but they belong to the Subjunctive Mood.

Present	*Präsens*	*Perfect*	*Perfekt*
Future	*Futur*	*Future Perfect*	*Futur-Perfekt* (for *Futurum Exactum*)
Past	*Präteritum* (if the shortened form *Präterit* is unacceptable)	*Past Perfect*	*Präterit-Perfekt* (or, if this is unacceptable, *Plusquamperfektum*)

FRENCH.

As English, except that French has no special Continuous Forms, and that the two meanings of the English Past are represented in French by two distinct tenses (the Past Continuous or Imperfect and the Past Historic). French has also two forms of the Past Perfect. The French tense that corresponds to the English Present Perfect is called simply "Perfect," because it is used (like the German Perfect), not only as a Present Perfect, *e.g.*, "Il m'a déjà écrit," but also as a Past Historic, *e.g.*, "Après son arrivée il m'a écrit."

écrit	**Present**	*a écrit*	**Perfect**
écrira	**Future**	*aura écrit*	**Future Perfect**
écrivait	**Past Continuous or Imperfect** [1]	*avait écrit*	**Past Perfect**
écrivit	**Past Historic** [1]	*eut écrit*	**2nd Past Perfect**
écrirait	**Future in the past**	*aurait écrit*	**Future Perfect in the past**

Present	*Présent*	*Perfect*	*Parfait*
Future	*Futur*	*Future Perfect*	*Futur Parfait*
Past Continuous or Imperfect	*Passé Continu ou Imparfait*	*Past Perfect*	*Passé Parfait*
Past Historic	*Passé Historique*	*2nd Past Perfect*	*Second Passé Parfait*
Future in the past	*Futur dans le passé*	*Future Perfect in the past*	*Futur Parfait dans le passé*

The names "Passé Défini" (for *écrivit*) and "Passé Indéfini" (for *a écrit*) have been given up by the French Commission referred to above. And Prof. Brunot writes as follows: "Tant que *je chantai* et *j'ai chanté* s'appelaient l'un *passé défini*, l'autre *passé indéfini*, ni maîtres ni enfants n'avaient grande chance de comprendre, car ces mots sont si obscurs que les grammairiens du XVIIIe, et même du XVIIe siècle, en faisaient souvent un usage absolument contraire à celui qui a été adopté depuis." ("L'Enseignement de la Langue Française," Paris, 1909, p. 15.)

The name *Futur dans le passé* is adopted by the French Commission and by Prof. Brunot in "L'Enseignement," &c. (p. 110).

[1] These two tenses express the meanings of the English and the German Past (*wrote, schrieb*) and of the special English Continuous Form of the Past (*was writing*).
The term "continuous" (in "Past Continuous") is to be understood as covering both the durative and the habitual meanings of the tense.

Latin.

As French, except that Latin has no separate form with the meaning of the French Past Historic, the Latin "Perfect" being used both as a Present Perfect, *e.g.*, "Scripsi ut rescribas," and as a Past Historic, *e.g.*, "Scripsi ut rescriberes," "Postero die ad me scripsit."

Latin has also no Future or Future Perfect in the past of the Indicative Mood, the past prospective meaning being expressed partly by the Future Infinitive, partly by tenses of the Subjunctive Mood.

scribit	Present	*scripsit*	Perfect
scribet	Future	*scripserit*	Future Perfect
scribebat	Past Continuous or Imperfect	*scripserat*	Past Perfect

Greek.

Here the two meanings of the English "Past" are expressed by distinct forms, as in French, the Greek Past Historic being called the Aorist—a name which is convenient in describing the tense-forms of the other moods and the verb-nouns and verb-adjectives formed from the same stem; moreover, the Greek Aorist often corresponds in meaning to an English Present Perfect, *i.e.*, is wider in use than the tense called Past Historic in French. It seems desirable, therefore, on several grounds to retain the traditional name for this Greek tense.

γράφει	Present	γέγραφε(ν)	Present Perfect
γράψει	Future	γεγράψεται	Future Perfect (Pass.)
ἔγραφε(ν)	Past Continuous or Imperfect	ἐγεγράφει(ν)	Past Perfect.
ἔγραψε(ν)	Aorist		

[1] See note, p. 63.

The following table shows the chief correspondences of the tenses of the Indicative in the four foreign languages to the tenses of English: [2]

English	German	Latin	French	Greek
writes is writing	schreibt	scribit	écrit	γράφει
will write will be writing	wird schreiben	scribet	écrira	γράψει
wrote was writing	schrieb	scribebat scripsit scribebat	écrivait écrivit écrivait	ἔγραφε(ν) ἔγραψε(ν ἔγραφε(ν)
would write would be writing	——	——	écrirait	——
has written has been writing	hat geschrieben	scripsit	a écrit	γέγραφε(ν)
will have written will have been writing	wird geschrieben haben	scripserit	aura écrit	(Passive γεγράψεται)
had written had been writing	hatte geschrieben	scripserat	avait (eut) écrit	ἐγεγράφει(ν)
would have written would have been writing	——	——	aurait écrit	——

[2] In this table some differences of usage are ignored; *e.g.*, the use of *hat geschrieben* and *a écrit* as Past Historic tenses (see above), and the use of the Present tense in the four foreign languages (with an adverbial expression of time) = the English *has been writing*.

REPORT OF THE HEADMASTERS' CONFERENCE CURRICULUM COMMITTEE.[3]

I. We desire to direct the attention of the Conference to some features of the problem:

(1) The growth in numbers and in efficiency of the preparatory schools during the past thirty years, so that they are now mainly responsible for secondary education for boys between the ages of nine and fourteen.

(2) The growth of the entrance scholarship system, which in the opinion of most preparatory-school masters determines the whole preparatory-school curriculum.

(3) The increase in the number of subjects upon which stress is laid, and the improvement in the methods of teaching such subjects, the consequence being that these subjects are now rightly regarded as far more important instruments of education, particularly for the young, than they were in the past; and with this development of new interests, some readjustment has become essential.

(4) A feeling of uncertainty on the part of schoolmasters, and a real desire for some simplification of the curriculum adopted.

If the public schools dominate the situation by the requirements of their scholarship examinations, no one would wish to disregard the opinions of the preparatory-school masters, and we are now called upon to suggest some scheme which shall make the machinery of secondary education work effectively.

[3] Slightly abridged.

It is clear that for the practical utility of such a scheme we are bound to rely upon a spirit of co-operation in working out any scheme in the spirit of the principles underlying it; we attach great importance to the freedom of our school system from schedules and regulations and rigid formulæ; we believe that our schoolmasters will deal more effectively with the problems of education and produce better schools by their own initiative, but we also recognise that such a belief can only be justified if schoolmasters are ready to act upon some solution of the difficulties which confront them.

II. We have conferred with preparatory-school masters representing considerable variety of opinion. We have been anxious to avail ourselves of their long experience, but we have formed our own conclusions and drawn up our scheme independently.

1. The starting point of the deliberations was the resolution passed in December, 1908: "That in the opinion of the Conference, the average boy cannot undertake the study of more than two languages besides English before attaining the age of thirteen years without detriment to his general education." Although it may be said that more than two languages, besides English, are not *required* for the majority of boys entering public schools, yet preparatory-school masters are encouraged to teach them (1) by the present system of scholarship examinations; (2) by the fact that few public schools have made adequate arrangements for boys to enter classical sides without a previous know-

ledge of Greek. A boy who offers only two languages besides English is either forced on to the modern side or seriously handicapped in his classical course.

2. The terms of the above resolution are quite consistent with allowing a boy *above the average* to take three languages besides English. It seems, therefore, that the principle upon which a curriculum should be framed is that *a boy should not be allowed to take a third language, besides English, until the foundations of two of them have been securely laid.* We discussed at some length what these two languages should be; the questions arose, (1) whether it would be wise to exclude French altogether from the curriculum at this stage; (2) whether Greek should be begun before Latin; (3) whether German is a suitable subject in the preparatory-school curriculum. We are quite convinced that Latin must be taken before Greek and that German should be excluded entirely from the preparatory school; and we have come to the conclusion that the two languages at the present time must be Latin and French. These are the only two which satisfy the requirements of a basis of education preparatory to classical and modern sides.

3. Throughout the whole period of the preparatory school we should emphasise the necessity for a thorough training in English, and the English papers should be made a substantial part of the entrance examinations of public schools; this training would help effectively those who find the greatest difficulties with Latin, and no doubt we should thus do much to remedy the neglect of the study of our language and literature, and the want of intelligence shown in the use of the mother-tongue. The most serious defect in the present curriculum is the neglect to which we have alluded, and the removal of it is the first claim upon those who consider any scheme of studies.

4. So far as Latin is concerned, it would be comparatively easy to fix a standard, before reaching which no boy should begin Greek. With regard to French, there is difficulty in defining the limits of the subject, and the object aimed at in teaching it, and in determining whether the time for beginning Greek bears any natural relation to a boy's proficiency in French. The evil indicated in the resolution is a real one, and many boys have suffered by their introduction to another language, while their hold on the elements of French is still insecure; but this difficulty will be gradually solved in practice if a recognised position is given to French as a compulsory subject in entrance scholarship examinations.

5. History should at this stage be mainly English—stories of Roman and Greek history should be brought into connection with the learning of Latin and of Greek.

6. A sub-committee of the Association of Preparatory Schools has been at work on "a syllabus of geography for preparatory schools." The aim is to systematise the teaching of the subject, and to enable public-school masters to assume on the part of all boys coming to them a general knowledge of the subject within *certain* limits and on certain lines. We consider that geography as interpreted in this syllabus includes as much science as it is desirable to teach at this stage.

7. It is unnecessary to fix standards or prescribed cycles of work in Scripture knowledge. After conferring with preparatory-school masters who have given much thought to the subject, we are agreed (1) that at the preparatory school Divinity may be expected to include the historical books of the Old Testament, the Synoptic Gospels, the Acts, and, for members of the Church of England, the Church Catechism, explanation and history of the Morning and Evening Services in the Prayer-book, and perhaps for elder boys some easy period of Church History; (2) that great importance should be attached to Bible reading, and committing to memory familiar passages or favourite Psalms. It is doubtless true that more depends in this than any other subject upon the interest of the teacher, and upon his reverence for the subject, if the work done is to be real and effective.

8. It appeared to us, after making inquiries, that two dangers affecting the due study of mathematics arise: (1) even in schools not laying any special stress upon the teaching of mathematics the attempt is made to cover too much ground with "average boys"; we are told that such boys before they leave are expected to reach the standard of the whole of arithmetic, algebra to the end of quadratics, and the first three books of Godfrey's "Geometry"; (2) on the other hand there is a strong temptation to sacrifice mathematics entirely to other subjects. It is as important in this subject as in the treatment of languages to insist upon not allowing boys to break new ground until they have effectively reached a certain standard in the earlier stage.

9. We understand that in a large number of preparatory schools drawing and manual training and music form either out of school or in school hours a regular part of the school course.

10. We now offer a scheme for the distribution of time in the week, not by way of prescription but rather *by way of illustration* to bring out the character of the course of study and the relations between subjects:

	Before Greek is begun.	After Greek is begun.
English	10 half-hours.	6 half-hours.
Latin	10 three-quarter hours.	7 three-quarter hours.
French	6 half-hours.	6 half-hours.
Mathematics ...	6 three-quarter hours.	6 three-quarter hours.
Scripture	4 three-quarter hours (not including Sunday).	4 three-quarter hours (not including Sunday).
History		
Geography ...	3 three-quarter hours.	2 three-quarter hours.
	39 periods = 25¼ hours.	31 periods = 20¼ hours (leaving 8 periods = 5 hours available for Greek).

This time-table is intended to include preparation.

We gather that this distribution would allow, in school hours if necessary, three half-hours for drawing, and three half-hours for manual training.

A certain amount of English written work is done in lessons on history and geography.

III. (1) What effect would such a preparatory course have upon the curriculum of a public school, and what readjustments would be necessary? (2) What action on the part of the public schools is required to bring the scheme indicated into being?

A boy well above the average would have gone through the necessary drill in Latin, French, and English, and reached the required standard for beginning Greek two years before he leaves his preparatory school: a boy who has less capacity, but still rather above the average, one year before he leaves; the average boy just about the time when he leaves. So that of the new boys admitted to the public schools, we may expect to have (1) a few scholars who have learnt Greek for two years; (2) a certain number who have learnt for one year; (3) a large number who are qualified to begin Greek; (4) about the same number who certainly should not begin Greek. We have also probably to add a certain number of boys already in the public school who may have reached the stage when they are qualified to begin Greek. We have thus in the lower half of a public school four classes of boys—(1) those who have done Greek for two years; (2) those who have done Greek for one year; (3) beginners whether new boys or not; (4) those who do no Greek.

We cannot think that any great confusion or difficulty would arise in dealing with these four classes. We are

aware, however, of two points that may very properly be raised: first, will it be possible to compel boys to begin Greek who should do so both for the sake of learning Greek and also in order to help, as we believe it would help, their Latin, and to stimulate new and wider interests? The answer depends ultimately upon the strength of the schoolmasters, and upon the amount of trust which the public are prepared to place in them. Schoolmasters will inspire more confidence if the learning of Greek and the time for beginning it are based upon a more intelligible and a sounder principle than is the case at the present moment, and if the study of the language comes to be regarded as the privilege of those who have been educated up to it, and not simply as part of a tradition which made Latin and Greek the only instruments of education, least of all as a subject which invites the least capable to look upon themselves as the bulwark of Hellenism. Secondly, and conversely, how shall we prevent the dislocation of the curriculum for those boys who had much better not learn Greek, but are to go to Oxford and Cambridge? We say at once we should decline to dislocate the curriculum; the necessary minimum of Greek required for Responsions or the Previous examination would not be learned in school hours.

There remains the fundamentally important question, what action on the part of the public schools is required to bring such a reformed curriculum into being. For schools which receive boys into their own preparatory department at nine there is no difficulty. But the majority of schools represented on the conference are not in this position. *No reform or system such as we have indicated is practicable unless the leading public schools agree to give practical encouragement to it by the conditions which they impose upon preparatory schools.* Both from our own experience and from the statements of preparatory-school masters, it is clear that of the forces which control the preparatory schools' curriculum the public schools' entrance scholarship examinations are far the most potent. Suggestions such as ours will be merely well-meaning platitudes unless enforced by the papers and marking of these examinations.

Scholarship examinations affect the training of far more boys than can be described as exceptional; indeed, with so many preparatory schools consisting of not more than forty or fifty boys, it is no exaggeration to say that the curriculum of all is affected by the demands that we make on the scholarship candidates.

So long as an excessive value is set upon advanced classical work for boys under fourteen, the less rewarded subjects such as French and English will inevitably continue to be neglected. The real crux of the problem is how to enforce in our scholarship examinations the standards in these subjects.

We appeal to all schools which award entrance scholarships to enforce the principles suggested in this memorandum. This can only be done *either* (1) by refusing rigidly to elect boys for excellence in advanced Latin or Greek unless they have passed a definite standard in English and French; (2) by a system of marks which shall give a practical value to English and French in comparison with Greek (*e.g.*, Latin $\begin{cases} 200, \\ 150, \end{cases}$ English 150, French $\begin{cases} 150, \\ 100, \end{cases}$ Greek 100).

The latter method we regard as the more practicable, and we believe that most preparatory-school masters would endorse this opinion.

Methods of this kind, if loyally adopted, would lead in time to an automatic solution of the problem before us. Public- and preparatory-school masters would soon find by experience how much Greek could be taught to boys under fourteen *consistently with a sound training in the general subjects* which are now compulsorily neglected. The standard in Greek would fix itself: there would be no need for artificial limitations such as have before now been suggested to the Conference. The best boys would, as now, be able to go furthest, but without the detriment to their own general education and to the curriculum of all boys which at present results from our too exclusively classical demands.

We claim that a scheme of study carried out on the lines indicated in this report does relieve the so-called "congestion," against which protests have been made, because it seeks to avoid compulsory addition of subjects before a boy is capable of receiving it: it does attempt to provide *all* boys with what has been sadly deficient in English education, an intelligent study and appreciation of the English language and literature; it does not depreciate but enhances the value of the study of Greek; it does attempt to deal with the situation as it exists for us in our generation, but also which will before long have passed beyond the control of us schoolmasters if we allow matters to drift, or if we appear to be incapable of any constructive effort. That there is nothing particularly heroic or startling about this attempt we are perfectly aware: schemes and proposals far more drastic have been before us and in our minds, but in considering them we have been anxious before all things to adjust our scheme to the circumstances of the great majority of our public schools, and therefore to make it intelligible and practical.

THE CORRELATION OF MATHEMATICAL AND SCIENCE TEACHING.

A LARGE gathering of the members of the Mathematical Association and the Association of Public School Science Masters assembled at Westminster School on Wednesday, January 12th, to consider the report of the Joint Committee upon the Correlation of the Teaching of Mathematics and Science, the recommendations contained in which we print below. Prof. Forsyth, who presided, said that the joint committee was influential in its composition and widely representative of men who were thoughtful and skilled in the range of subjects which had to be discussed; he welcomed the formulation of a constructive plan aiming at the achievement of a project of supreme importance to all who are directly concerned with subjects acknowledged to stand in the forefront of secondary education. Education has made great advances since his own school days, and boys are no longer required to learn the theory of instruments they have no opportunity of ever seeing; he believes that when real physical things are made the subject of mathematical teaching there should be actual observation of those physical things as a preliminary to the mathematics; whilst, on the other hand, there is much to be said for the utilisation of calculations, whether purely numerical or even occasionally more formally mathematical, in connection with experimental methods. He hopes that those who will have the opportunity of putting the recommendations into practice will exercise a little liberty in their sequence so that, without introducing undue variety, teachers may be allowed to exercise their own individuality.

After Mr. C. Godfrey, the chairman of the joint committee, had explained the position of the mathematical members, and Mr. D. Berridge, the secretary, that of the science members of the committee, the following resolution was proposed by Prof. H. H. Turner and seconded by Prof. H. E. Armstrong: "This meeting is in sympathy with the attempt embodied in the present report to correlate more closely the teaching of mathematics and science."

During the subsequent discussion Sir Joseph Thompson spoke of the danger of teaching physics without mathematics, and urged that the calculus should be taught at a much earlier age than is at present the case. Finally, the motion was put to the meeting and carried *nem. con.*

The main part of the committee's report is subjoined.

Several societies have during the past few years considered the teaching of mathematics and of science; since, however, they have confined their attention to the subjects separately, and in many instances to particular types of school, the Joint Committee decided not to rely upon data previously collected, but to send a circular to all the schools mentioned in the "Schoolmasters' Year Book" asking for details of the conditions under which the subjects are at present taught. This has been done, and replies received from about 300 schools representing all types of non-primary education. The questions asked have made it possible to present a report dealing with a larger number of schools than has been hitherto possible.

The committee recognises with pleasure that the returns prove, not only that a considerable advance has been made during the past ten years in the teaching of mathematics and science, but that in many cases a definite attempt has been made to correlate this teaching.

Mathematical masters may give much valuable help to their science colleagues by setting problems requiring physical data and expressed in metric units; an excellent start in this direction has been made, and it is hoped that such problems will become more common in text-books. It is, however, probable that at the present time the chief obstacle to co-operation is that lack of laboratory training or experience which is unfortunately so common amongst mathematicians.

The committee recognises the value of nature-study as a training, especially for younger boys, whether it is associated with physical geography or taught in other ways; but since such teaching in preparatory schools has been already dealt with by the Association of Public School Science Masters,[1] and mathematical masters are not particularly concerned with it, the committee, beyond obtaining statistics as to the conditions under which it is taught, has not considered it in the present report.

RECOMMENDATIONS.

The committee recommends that:

(i) Measurements of length with a decimal scale should be taught as soon as decimal fractions are introduced. Before proceeding to any further measurements, all boys should be familiar with the addition, subtraction, multiplication, and division of decimals treated on modern lines;[2] they should also be familiar with unitary method; and even in cases where some other method of dealing with questions of proportion is used, care should be taken that the unitary method is not forgotten, so that examples may still be treated by it when desired.

(ii) Practical work should be taught as early as possible in preparatory schools, and from the lowest forms of public schools; the first introduction to it should be in practical geometry, including the measurement of lines, angles, and areas of both plane and solid figures, and the volumes of the latter.[3] The actual measurement of solid models is extremely important, and boys should be taught to make free-hand sketches of them. (Although for class purposes it will be found advisable to use wooden models, it may be pointed out that it is a valuable exercise for the boys themselves to construct models of the simpler solids.)

(iii) The measurements suggested in recommendation (ii) should be entirely in the hands of the masters who teach mathematics, and in no case delegated to either the science or the art staff. The work may be done in an ordinary mathematical class-room (sets of models being kept in the room), and should form an essential part of the mathematical teaching; *e.g.*, when the subject of areas is approached in arithmetic, the first question should be such as the following: "Draw a rectangle 4 inches long and 3 inches wide; divide it into square inches; of how many square inches does the rectangle consist?" hence lead up to the method of finding the area of a rectangle. The boys should then, from their own measurements, find the area of the faces of rectangular models, the areas of rooms and, where possible, of playgrounds, &c. Until this has been done, the abstract questions of the text-books should be avoided.

There seems to be, at the present time, a special danger of the practical drawing being considered an end in itself. At this stage, its main aim should be to lead up to and help in other work; of course, its special use is to aid by a process of induction the acquisition of the fundamental facts dealt with in deductive geometry; *e.g.*, the construction of triangles from suitable data should be used to lead up to the cases of congruent triangles.

(iv) When the pupils have become accustomed to the measurements of rectilinear figures, they should be introduced to the method of finding the areas of irregular figures by means of squared paper, and in this connection the use of maps drawn to scale on such paper will be found a valuable means of sustaining interest. This work should be soon followed by the experimental determination of the value of π; the boys will then be in a position to use squared paper for finding the areas of circles, &c., and to understand the formulæ used to express them.

(v) It is desirable that, where possible, the elementary measurements of mass (or weight) and volume, including the use of scales and water, should be undertaken by the mathematical staff, since if it be done by the science staff a want of correlation with the mathematical work is likely to result. The boys, having gained an insight into the measurement of areas and volumes, should be required to generalise their ideas of the latter by measuring the sides of rectilinear solids, and then, by dropping them into a graduated cylinder containing water, to determine the displacement produced. From rectilinear solids to cylinders and spheres the transition will be a simple one for those boys who have passed through the course proposed in recommendation (iv).

This work should be closely correlated with the actual working of numerical problems; *e.g.*, having weighed a piece of metal and determined its volume, the pupil should be required to calculate the weight of other solids of given dimensions and made of the same material; questions of cost, &c., may well be introduced, and an experienced teacher will have no difficulty in making his boys realise that the measurements made have a real connection, not only with the ordinary arithmetical lessons, but also with the actual details of daily life.

(vi) Local conditions must decide whether the measurements proposed in recommendation (v) are done in an ordinary class-room or in a room specially devoted to practical work; but the committee wishes to point out that they can be made in an ordinary class-room without

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[1] See *Preparatory Schools Review*, March, 1905.

[2] See the Mathematical Association report upon "The Teaching of Mathematics in Preparatory Schools." (Geo. Bell and Sons.) Price 3*d*.

[3] This being approached by building up rectangular blocks with inch or centimetre cubes.

the use of bulky or expensive apparatus. It is never necessary, and generally inadvisable, for beginners to use delicate and therefore expensive balances; excellent results can be obtained by the use of ordinary apothecary's scales if these are provided with a hook under each pan, and the pans supported, on the work-table or otherwise, each time a change is made in the weights; such scales can be bought for 3*s.* 6*d.*, and are easily packed into a small space when not in use. One considerable advantage of carrying on the work in an ordinary class-room is that it is then more easily co-ordinated with the mathematical lessons.

The course of measurements, including the use of balances, should not be too long, and need very seldom exceed twenty hours of practical work. A suggested syllabus has been issued.

(vii) The term "measurements" as used above should not be understood as including any form of mechanics; *e.g.*, even simple experiments upon the principle of moments or the parallelogram of forces should be postponed until the pupils have gained some acquaintance with the elements of trigonometry as proposed in recommendation (ix).

(viii) The introduction of Archimedes' principle marks a break in the teaching of practical measurements, and when this point is reached the work may be left to either the mathematical or the science staff.

(ix) It is so important that sufficient time be devoted to arithmetical exercise that it is, in general, inadvisable for boys to begin the study of trigonometry while at preparatory schools. If, however, they do make a start, the work should be confined to numerical trigonometry—*i.e.*, the pupils should be taught the meaning of the ratios, the method of calculating them, and their use in the solution of triangles by division into right-angled triangles. But all questions of identities should be left until the boys are at public schools, in which numerical trigonometry as defined above should be commenced as early as possible, and form the first term's work in this subject.

(x) The aim of mechanics teaching in the earlier stages should be to familiarise the pupil with mechanical principles rather than to enable him to solve mathematical problems. At first, therefore, he should be made to rely upon experimental and graphical methods. As the course advances trigonometry should be introduced into the work, and in order that this may be ready to hand, a short course of trigonometry, as recommended above, should precede any instruction in mechanics.

It is advised that statics be begun in the lower part of the "upper school" as a part of the regular mathematical teaching, *i.e.*, it should be taught by the mathematical master during mathematical hours. The first term should be devoted to practical work in the laboratory and comparatively simple numerical and graphical applications of the principles arrived at by experiment, the more formally mathematical portions of the work being left to be dealt with in the subsequent terms.

(xi) The use of logarithms is at some schools introduced as a branch of arithmetic, and the results obtained prove that this plan works well: the more usual method, however, seems to be to introduce the subject immediately after the pupil has learned the meaning of a fractional index in algebra. If the latter method be adopted, it is important that those boys who are backward in mathematics shall not be allowed to spend an undue amount of time in working at simultaneous quadratic equations, &c., before the use of logarithms is explained to them.

The committee recognises that there are several methods by which the meaning of a logarithm may be made clear to boys, and they do not wish to urge any one method to the exclusion of others; it believes, however, that by whatever method they are taught, the object should be to enable boys to use four-figure tables as an instrument of calculation with as much idea of the underlying principles as they seem able to acquire without difficulty. Beginners should never be provided with tables of anti-logarithms or co-logarithms.

(xii) Whilst fully realising that arithmetical accuracy is of the greatest importance, and that the younger boys must be drilled until this is attained, the committee regrets to find that there is only a small percentage of schools in which the use of the slide rule is taught, and that even in these the instruction is confined to the senior boys. It recommends that its use be explained to all boys as soon as they have mastered the use of logarithms; a few slide rules should be considered to be a necessary part of the equipment of all physical laboratories, and the boys encouraged to use them as much as possible.

(xiii) Elementary physics should always be introduced before any chemistry is taught; the laws of heat form an essential introduction to the study of chemistry, and the committee recommends that, when possible, at least two terms should be devoted to their study before beginning chemistry.

It is of the utmost importance that in teaching the early stages of elementary heat the master should neither use nor allow the use of formulæ; *e.g.*, when treating problems on the expansion of solids, the boy should be made to understand that the coefficient of linear expansion is the amount by which unit length expands when heated through unit temperature, and should then make the calculation by ordinary unitary methods.

Example:

A brass rod is 25 metres long at 10° C.: find its length at 50° C. if the coefficient of linear expansion of brass is 0·000018.

1 metre of brass heated 1° C. expands 0·000018 metre.
25 ,, ,, 1° C. ,, 0·000018 × 25 metres
25 ,, ,, 40° C. ,, 0·000018 × 25 × 40 metres
= 0·018 metre.
Length at 50° C. = 25·018 metres.

Again, when dealing with simple problems upon calorimetry, the pupil should be made to calculate the number of calories gained by the water (and the calorimeter) to realise that the whole of this has come from the body under examination, and to use the result to find how many calories were lost by one gram of the substance falling one degree.

Example:

A calorimeter weighing 60 grams and at a temperature of 20° C. has 50 grams of water at 100° C. poured into it, and the resulting temperature is found to be 92·2° C. Calculate the specific heat of the material of which the calorimeter was made.

1 gram of water falling 1° C. gives up 1 calorie.
50 ,, ,, 7·8° C. ,, 50 × 7·8 calories
= 390 calories.
60 grams of substance rising 72·2° C. requires 390 calories.
1 ,, ,, 1° C. ,, $\frac{390}{60 \times 72 \cdot 2}$ calories
= 0·09 calorie.

Shorter methods may be introduced as the pupil becomes more experienced, but in any case the premature use of a formula such as

$$S = \frac{m(T - t)}{M(t' - T)},$$

before the physical facts upon which it is based are clearly

grasped only serves to reduce a valuable educational lesson to mere cram.

(xiv) It is undesirable that either formal physics or chemistry be taught in preparatory schools, and it is suggested that in the few schools where at present either of these subjects is taught the time might be more profitably devoted to practical measurements. Questions should not be set in formal physics or chemistry at the entrance or entrance scholarship examinations to the public schools.

SOME TOPICS DISCUSSED AT THE EDUCATIONAL CONFERENCES.

JUDGING from the large attendances at the numerous conferences of teachers and others which have been held during the vacation in London and the provinces, there is no likelihood of any diminution of interest in questions of educational administration and practice. It is a gratifying sign of their interest in their work that so many teachers are willing to give up part of their well-earned rest to the discussion of problems which the heavy demands of term-time make it impossible to consider at any other time. Though we have devoted a large part of our space this month to the work of the conferences, we have been compelled to make a selection from the bewilderingly large number of topics which have been under consideration, but we are hopeful that we have chosen those subjects which make the widest appeal. In addition to the papers printed in an abridged form in another part of this issue, we give in the following paragraphs brief references to other important addresses and papers.

THE TRAINING OF ENGINEERS.

The important question of the technical education of engineering apprentices occupied the attention of the conferences in London and Leeds. In the north of England Mr. V. A. Mundella described the system in vogue in Sunderland. He explained that three main principles were agreed upon at a conference in May, 1903, between the Associations of Shipbuilders and Engineers of Sunderland and district and the representatives of the Technical College: a combination of practical training in the firms' workshops and drawing offices and a scientific training in the college; two years to be spent by the apprentices in the workshops before the college course is begun; during these two years the apprentice shall attend evening classes in mathematics and other preliminary subjects under the control of the Technical College. The following privileges are attached to the apprentice-student scholarships: During the three or four years following their selection they are allowed leave of absence from the firm to attend the college day classes from October 1st to March 31st each year; no college fee is charged; the time spent in the college is reckoned as part of the apprenticeship; the rate of advance in wages is the same as if they were continuously employed in the shops; so far as possible, during the summer months, special facilities in the works are given by the firms to the apprentices for traversing all the various stages of the work. At the end of the apprenticeship a college diploma or certificate is granted to those who complete their course of study and their apprenticeship in a satisfactory manner, such certificate being signed by the Associations of Shipbuilders and Engineers of Sunderland and district, the firm to which the student is apprenticed, and the Technical College authorities.

DOMESTIC SCIENCE INSTRUCTION.

The training of teachers of domestic subjects, said Prof. Smithells at Leeds, is almost wholly conducted in the special schools founded by private effort, though some of these schools are now under the management of a public education authority. The curriculum of these schools is subject to the approval of the Board of Education, and their work is periodically inspected by a special staff of women inspectors. Diplomas are issued by each individual training school under strictly specified conditions, and grants are made to it on account of each student who completes a course. These grants are £7 for a full and £3 for a limited diploma course in cookery, £3 for a diploma course in laundry work, £2 for a diploma course in housewifery, and £12 for a combined domestic subjects diploma course.

We are now at a critical juncture, and we watch with anxiety to see whether the State will at length open its purse with more reasonable liberality to promote a type of public education which everyone admits to be important and many believe to be more urgently called for than any other. With regard to the future of the training schools, Prof. Smithells said they ought not to be left out in the cold as something subordinate or alien in relation to the rest of our organisation for training teachers. There is no ground for any such treatment, except that what has lived under neglect may continue to live under neglect. The association of domestic training schools with ordinary training colleges would, from the point of view of education and administration, be a distinct economy, and it would put an end to the quite unjustifiable caste feeling which has so long prevailed. The existing attitude amounts to a declaration that it is regarded as of more importance to the State that the future housewives of the poorer classes should have some smattering of geography than a reasonable measure of competence in the simplest domestic arts.

THE TEACHING OF HISTORY.

Mr. C. Darling at the Leeds conference urged that, valuable as the study of history is, we must be on our guard against expecting too direct results. The end of our teaching is not so much to impart knowledge as to exercise the power of applying it. The problems which history furnishes cannot be solved with mathematical certainty, but at least we can judge of the temper of mind they tend to produce by the methods of teaching we employ.

A teacher of history will lead his pupils to select facts, to arrange them in proper sequence, and to discover their causal relation. Refraining from imposing his own authority, he will guide his pupils in the use of their own observation and judgment. He will hope to quicken their imagination and to develop something of sympathy and a tolerant spirit, and an interest in subjects connected with historical study. If a teacher has definite aims and makes a careful selection of material, it is possible to complete a wider course of study than that which is usually attempted.

In selecting the material for study, it is desirable to discover some unity of thought, so that the pupil may follow out a series of events and see a continuity in their development. The practice of dealing with events promiscuously, according to their occurrence in time, tends only to confusion and consequent lack of interest. On the other hand, the continuous study of a suitable topic will ensure connected thought and a clearer understanding of the relative importance of the facts involved. This method,

too, leads most naturally to exercises in simple research—an effective way of testing a pupil's power to do independent work. If a subject for investigation is assigned, a scheme of inquiry indicated, and reference books named, a lesson may be devoted to a discussion of results, and the exercise will be found an effective means of developing alertness of mind and independence of judgment.

At the annual meeting of the Historical Association Prof. Firth gave an address on "English History and English Literature in the Nineteenth Century." The present time is most opportune to impress upon all how necessary it is that the history of this and of European countries should be known to all who are called upon to deal with current questions. In other European countries training in national history is one of the most important parts of tuition, and he pleaded that it should be made so in this country. English history in connection with European history should take an important place in the upper forms of English schools, and some connection should be established between history and literature, for literature illustrates in a particularly effective way the most important facts of history.

SALARIES OF ASSISTANT-MASTERS.

Mr. Charles, at the annual meeting of Assistant-masters in Secondary Schools, presented the report of a special sub-committee on the conditions of secondary-school teachers in France, Germany, Austria, Denmark, Norway, Sweden, Finland, and the United States. Teachers in France and Germany, the report stated, are Civil Servants; in England the position of a teacher has been less secure than that of a domestic servant. In Germany few teachers start with a salary of less than £150 per annum; in France none lower than £100. Denmark provides its male beginners with £133 a year, whilst women are paid £84 to £105. Men teachers in Holland start at £150, women at £100. In England the salary is less than £100 in 10 per cent. of the schools from which the returns were obtained, and £120 is a fair estimate of the amount usually paid to men teachers just beginning their career. In England increases are granted spasmodically; in Germany, Scandinavia, and many cities of the United States they are automatic. The average maximum salary in Germany is more than £300, France £300, Denmark £222, while in the United States £500 to £700 is frequently obtainable. Out of 1,903 cases of male English teachers, 822 receive £200 and less; 850 receive £200 to £350, and 231 more than £350. France, Germany, and the Scandinavian countries all provide pensions for teachers, but for masters in secondary schools they are practically non-existent in this country. In only twenty-four schools, employing 465 masters, have pension schemes been started, and the lack of pensions and the low salaries largely account for the great wastage of teachers long suffered by English secondary education. In England the hours of work vary from twenty in the girls' high schools and a small number of boys' schools to thirty or even more; in other countries they vary from twelve to twenty. Every other country seems to be in advance of our own in providing opportunities for teachers to study at home or abroad. France gives the opportunity; Germany both opportunity and means. The status of teachers is least in Germany, Austria, and Sweden; in Austria and Sweden they have official rank, and the head-master ranks with the major-general; in France status depends on qualifications, and in the United States it is according to the teacher's success. In England teachers may have a certain standing as graduates of a university, but as teachers they have little or none.

HISTORY AND CURRENT EVENTS.

THE political crisis of this winter has led our thoughts back naturally to the great constitutional struggles of the seventeenth century. It has often been remarked in various ways that politics—the events in the life of a State—are concerned mainly, like the events in the life of an individual, with either commerce or religion. In the reigns of James I. and Charles I. the conflict arose mainly out of religious considerations, though questions of taxation were also so prominent that some of our older historians were led to ignore, or at least minimise, the religious aspects of the conflict. So to-day, though the question of the Budget is apparently the most important issue, there are some whose votes are determined largely by their views on the question of religious education in the elementary schools.

OUT of the financial and religious disputes in the period of the early Stuarts arose at last a question of constitutional change. Because King and gentry differed, the King practically abolished Parliament for eleven years, and when the civil war was ended the triumphant army abolished the kingship for a similar period. In the end, however, as we all know, the revolution ran its full circle, and the return to the old forms of the constitution which was begun under Cromwell was completed under Charles II. So now, because the Houses of Parliament have differed on many questions, financial and religious, there are proposals for a change in the constitution. But note that, in both cases, constitutional history comes last in the sequence of events. We do not change our methods of government for the sake of change or in obedience to some theory which may loom large in the discussions, but merely to obviate some "evil" from which the nation is "suffering."

THERE is at least one great contrast between the struggles of the Stuart period and our present crisis. The differences between Charles I. and his House of Commons led at last to civil war, and the conflict was settled for the time on the field of battle. It is impossible, of course, to foretell, but there are no signs at present of any such method being used to-day. There are many reasons for this difference, but we may content ourselves with noting some of the early steps in the process. At the Restoration of 1660 Englishmen were filled with horror at the thought of military government, and it was only reluctantly, and under the necessity of war with France, that the country agreed to the existence of a standing army. The Revolution of 1688 was all but bloodless in England, though in Ireland and Scotland there was fighting, and one of Walpole's claims to consideration is that he accustomed our politicians to moderation in the pursuit of defeated statesmen.

ONE of the arguments which have been used on behalf of the House of Lords and their action is that some parts of the Budget are in the nature of a "tack." That phrase means that, under the form of a Finance Bill which it is agreed that the House of Lords may reject, but cannot amend, changes in the law are proposed, which, if embodied in an ordinary Bill, would be subject to amendment by that House. Readers of our text-books will remember a similar dispute in the middle of last century about the taxes on paper. But the most famous of proposals to "tack" was that of the Tories in Anne's reign, who wished thus to force on the Whig House of Lords the Occasional Conformity Bill. The first Duke of Marlborough's correspondence is full of references to these "tackers," who endangered the progress of the war by their High Church policy.

ITEMS OF INTEREST

GENERAL.

THE annual general meeting of the Association of Headmasters was held in London on January 12th and 13th. Mr. Philip Wood, headmaster of Darlington Grammar School, in his presidential address, dealt chiefly with the position of local endowed schools and the question of registration. Numerous resolutions were passed, one being to the effect that a reasonably high standard of attainment in such subjects as are taught in public elementary schools (regard being had to the candidate's age) should be required of all boys to whom free places in secondary schools are awarded. Among other resolutions adopted, the following may be mentioned: "That obstacles should not be placed by the Board of Education or by the local education authority in the way of removal by the governors from such free places of those boys who, in the opinion of the headmaster of the school, are not justifying by their work or conduct the expenditure of public money upon their education." "That the disturbing effect of the free-place system on school finance is a matter of grave concern, and contains the possibility of permanent injury to those schools where fees form a substantial part of their income." "That this association, having in previous years expressed approval of superannuation of secondary-school teachers, hereby requests the council to co-operate with the council of the Assistant-masters' Association and other associations of non-primary school teachers in a practical effort to deal with the subject." "That this association welcomes the establishment of the Public Schools League for Imperial land settlement as opening out careers for English youths in the oversea dominions of the Empire, and as bringing about a closer touch between Great Britain and her Colonies." "That, in the opinion of this association, English should form a compulsory subject in all university entrance examinations." Resolutions were adopted also approving the action of the federal council in convening a comprehensive conference of representatives of teachers' associations to deal with the question of teachers' registration, and pledging the association to promote the formation of a teachers' registration council on the lines suggested by the conference.

THE annual meetings of the Incorporated Association of Assistant-masters in Secondary Schools were held on January 5th to 7th, at the City of London School. The general meeting of members was held on January 7th, and was well attended, Mr. F. Charles, the newly elected chairman for 1910, presiding. The annual statement of accounts showed a balance for the year of £178. A resolution on the payment of substitutes during illness, in the following terms, was adopted: "That this association considers that the policy pursued in certain schools of compelling assistant-masters to bear the expense of providing substitutes during illness is illegal, inequitable, and oppressive, and ought to be entirely abandoned." Resolutions with regard to a draft scheme for establishing a Sickness and Accident Insurance Fund for members were also passed. In the afternoon, Prof. J. Adams, principal of the London Day Training College, delivered an address on "Professional Spirit." He claimed that historically teaching was entitled to rank as a profession, as much as law, medicine, or divinity. The universities owed the teaching profession a great deal, and, were it not for the teaching profession, the arts faculties in the various universities would be starved. As teachers they could not know too much. The perfect teacher was a man who had a backbone and could make other backbones ply to his, who knew his subject and how to deal with it. The discussion of the interim report recently issued by the Joint Committee on Grammatical Terminology followed, and the following resolution was passed: "That the interim report of the Committee on Grammatical Terminology be provisionally approved, and that the best thanks of this association be tendered to the committee."

IN his presidential address, Mr. W. A. Newsome, the retiring president of the Assistant-masters' Association, after reviewing the year's work of the association, dealt with a number of questions of great importance in education. As secondary-school teachers, he said, most of us are weary of new subjects; we long for the simplification of the curriculum and for a more concentrated purpose in our teaching. The fact is that schoolmasters as a profession have been so taunted with conservatism that there has been a tendency to go to the other extreme. In the feverish desire to be up to date, they have been inclined to take up every new fad thrust upon them. Every schoolmaster, said Mr. Newsome, should be an *advocatus diaboli* when any new subject comes up for canonisation. It is not new subjects that secondary education wants, but improved methods of teaching the old subjects. Speaking of the inspection of secondary schools, he remarked that many inspectors are really consultative advisers to the schools in their districts, and their criticisms are friendly, helpful, and freely sought after. Later, Mr. Newsome said we are face to face with the fact that home discipline is largely a thing of the past, that the onus of training boys has been shifted to the schoolmaster's shoulders. "The nation is looking to us," he said, "for the development of backbone in the coming generation, and we must ask ourselves at this beginning of a new year, how are we carrying out this task committed to us? Are there not evidences all round us of relaxed moral fibre, of softness, of slackness, of self-indulgence? Reverence and respect are looked upon as servile; the average boy's only joy in work seems to be in working to the absolute minimum of safety."

THE annual meeting of the Assistant-mistresses' Association was held in London on January 8th. Miss E. S. Lees, of Clapham High School, was elected president for 1910. The following resolutions in connection with the pension scheme were adopted: (i) that this meeting approves of a compulsory scheme; (ii) that the yearly minimum pension should be £50, and should be paid to the mistress from the age of fifty-five until death; (iii) that the yearly premium should, as a rule, begin to be paid by the mistress at the age of twenty-five, and that there should be thirty payments, but that in special cases of early or late entry adjustments should be made; (iv) that in the event of death before thirty payments are completed not less than half the contributions should be returned to the legal heir without interest; (v) that in the case of a mistress retiring from teaching before the thirty payments are completed, a lump sum amounting to at least three-quarters of the actual payments, without interest, be returned to the mistress, provided that no teacher with less than two years' contributions should receive any portion of them back; (vi) that the above resolutions presuppose that the assistant-mistress pays not more than half the premium. It was also resolved: "That, in view of the great diversity of opinion among teachers and the very small body of carefully tested experience in the teaching of science as applied to the domestic arts as yet available, this meeting would view with regret at the present time the adoption by university examining boards of alternative syllabuses in applied science relating to home economics."

In her presidential address to the Assistant-mistresses' Association, Miss E. M. Bancroft, the retiring president, summarised the numerous activities of the association during the past year. She pointed out that the President of the Board of Education, in reply to a deputation, held out hopes of increasing the number of women on the inspectorate as well as of extending their scope and influence, but he was unable to give any definite promise with regard to changes in the conditions of tenure and salary. She congratulated the association on the substantial increase in its numbers—from 793 to upwards of 900. Turning to the hopes of education in the future, she said that of late years an extraordinary advance has been made in our conception of the import and true end of education. An honest and united attempt is being made to arrive at a definition which shall give determination and directness to our educational work. Public opinion has awakened to the fact that education is not a matter concerning a few isolated teachers, but the greatest matter of the common weal. In a comparatively short time a change has taken place in secondary education in England. A network of educational activity is spun over the face of the country. We are not yet, she continued, the greatest educational nation upon earth, yet the lines of movement, symbols of awakened vigour, are to be seen; all our educators are in search for the best conception of what is the true end of education. "Education," she said, "with its newly conceived end and its modern methods, is now a national undertaking."

The general meeting of the Classical Association was held in London on January 10th and 11th. Lord Cromer presided, and delivered an address on ancient and modern Imperialism. The interim report of the Joint Committee on Grammatical Terminology was, with the following amendments, provisionally approved. It was agreed to refer paragraph 7, dealing with the "indirect object," back to the committee, as well as the notes to paragraphs 1 and 4. It was resolved: "That a university matriculation examination in Latin should comprise as obligatory parts, in both of which candidates are required to satisfy the examiners—(*a*) set books, or prescribed portions of authors, with questions, historical and literary, as well as grammatical, arising out of them, as large a choice of books as possible being left to the candidates; (*b*) unprepared translation." The Curricula Committee presented a report upon a four years' Latin course for secondary schools in which the leaving age is about sixteen, and resolutions were adopted declaring it to be desirable that in the matter of grammar and vocabulary a definite understanding should be reached as to the range of knowledge required, and that in the early stages of classical study, while the amount of grammar should be strictly limited to what is necessary for the study of texts suitable for these stages, yet within these limits a high standard of thoroughness and accuracy should be demanded.

The Association of Public School Science Masters held their annual meeting on Thursday, January 13th. Prof. H. E. Armstrong dealt in his presidential address with "The Future of Science in our Schools." In the course of an interesting and "fighting" speech he maintained that a literary man is unfitted by nature and training for the purely experimental work of teaching, and predicted that ere long the literary man in charge of a school will be an anachronism; on the other hand, the science master must realise that his work should be experimental and not consist merely of demonstrations; to prepare oxygen, or even to allow the pupils to do so, is not to give an experimental lesson. What is wanted is a larger use of problems so set that their solution can be found by the boys themselves. Mr. J. R. Eccles (Gresham's), in a paper upon "The Symbols used in Physics," urged that the authors of text-books should all use the same symbols for the various physical constants, and, so far as possible, avoid the use of Greek letters. In supporting Mr. Eccles's contention, Mr. Etchells, of the Concrete Institute, said that engineers have already made the attempt to introduce a uniform system, but they require the help of the schoolmaster if this is to become universal.

At the afternoon meeting of the association Mr. L. Cumming (Rugby) read a paper urging that no boy should be allowed to finish his school life without receiving some instruction in geology and biology; he submitted that these subjects would in many cases furnish a hobby in after life, when most of the formal chemistry and physics learnt at school has been forgotten. Mr. W. E. Cross (King's School, Peterborough) discussed the planning and equipment of laboratories, illustrating his paper with plans showing the various arrangements now in use, and giving details of the best means of ventilation, supplying electricity, &c. Mr. F. M. Oldham (Dulwich) read a short paper upon oxidation and reduction. He pointed out that the usual definition of oxidation—*i.e.*, that it is an increase in the electro-negative part of a compound—is too wide, since it included the formation of a salt from a base; he confessed himself unable to give a satisfactory definition. Prof. Armstrong suggested that although the process of oxidation is one understood by all chemists, it is incapable of definition to the beginner.

The annual business meeting of the Association of University Women Teachers was held on January 14th in London. The report stated that during last year 283 ordinary members had been elected, and that the total membership stands at 2,007. Miss Janet Case, the president, pointed out in her address that seventy-nine new members had availed themselves of the pension scheme of the Norwich Union Office. There was a great increase in the tutorial classes in 1909, the number being thirty-three, with an attendance of 1,000. A resolution providing for the incorporation of the association was agreed to, and Miss Tuke, of Bedford College, was elected president for 1910.

The annual general meeting of the English Association was held in London on January 14th and 15th. The association numbers at the present time 1,124 full members and 354 associates, an increase of 243 full members and a decrease of 56 associates. Lord Morley was elected president for 1910. Except that several points of detail were referred back to the Joint Committee for further consideration, the interim report of the Joint Committee on Grammatical Terminology was adopted.

Mr. D. J. Shackleton and his friends in the House of Commons and the Trade Union Congress have made a grievance of the fact that the rule as to the 25 per cent. free places in secondary schools for pupils from elementary schools is not observed in some cases. At his request a Return has been made by the Board of Education showing, in reference to Article 20 of the Regulations for Secondary Schools, the number and names of the fee-charging secondary schools receiving the higher grant in which the ordinary percentage (25 per cent.) of free places has been reduced or varied by the Board. It appears from this Parliamentary Paper (323, price 1*d.*) that there are 117 secondary schools in England and Wales, out of the

total of 926 under the Board's Regulations, which receive the full grant of £5 per pupil, though the percentage of free places is from ten to twenty instead of twenty-five. There are, in addition, sixty-one schools on the lower scale of grant (£2 10s. for each pupil between twelve and eighteen years of age), but the regulation as to 25 per cent. free places does not apply to these.

THE Return gives the names of, and the numbers of pupils in, the 117 schools earning the grant on the higher scale without offering 25 per cent. free places. The grounds for variation or reduction of the normal percentage are stated by the Board to fall roughly under three heads, namely: (i) financial circumstances; (ii) the fact that there is an adequate provision of free places in neighbouring schools; (iii) the existence of a large percentage of boarders in the school. Reductions have been made on financial grounds where it appeared that the increase of free places to the full extent contemplated by the Regulations would have practically absorbed, or more than absorbed, the extra grant earned by compliance with the new conditions imposed by the Regulations of 1907. The fact that an adequate provision of free places is already made in other schools which offer an educational course more suitable in character and duration for the majority of pupils who come from public elementary schools has been held to justify a reduction of the normal percentage in a school of an advanced type in the same locality. Schools containing a large percentage of boarders have been regarded as to that extent non-local, and have accordingly been required to offer a reduced percentage of free places.

WHAT we should like to see now is a Return showing the percentage of pupils who complete their course, or remain at school until they are seventeen or eighteen years of age, in each of the three groups of schools, namely: (i) schools with 25 per cent. free places and the full grant; (ii) full grant with less than 25 per cent. free places; and (iii) lower grant. Our opinion is that in many cases there are more free places than there are pupils prepared to continue at secondary schools sufficiently long to derive advantage from the education offered. To insist upon the provision of 25 per cent. free places in a district where most of the pupils who fill them leave at fifteen years of age or under is to make the secondary school merely a higher elementary school. We believe that if secondary education were made free to all pupils from elementary schools on the condition that the course must be completed, the proportion of free places now offered would be found to be more than sufficient to satisfy the demand for them.

A RECENT number of the *University Correspondent* contains a selection from the annual crop of "howlers" gathered in its prize competition for the best collection of amusing mistakes made by pupils in answers to questions. We give a few of these humorous blunders, some of which are probably due to faulty speech by the teacher, while others illustrate the curious misconceptions which often exist in the schoolboy's mind: The earth is an obsolete spheroid—The Duke of Clarence was drowned in cold blood—In India a man out of one cask may not marry a woman out of another cask—Tennyson wrote "In Memorandum"—Sir Walter Scott's publishers liquified, and he had to pay off the National Debt before he died. This wore him out—Gender shows whether a man is masculine, feminine or neuter—*Raison d'etre*, right to live—*Il pleut à verse*, he cries at poetry—*Sursum corda*, I double hearts—*Hors de combat*, the hour of battle—Geometry teaches us how to bisex angels—In the stomach starch is changed into cane-sugar, and cane-sugar into sugar-cane—Algebraical symbols are used when you don't know what you are talking about—The Press to-day is the mouth-organ of the people—A lie is an aversion to the truth—Pythagoras built a bridge for asses—Women's suffrage is the state of suffering in which they were born.

THE second of the course of lectures on methods of geographical instruction arranged by the Geographical Association for the present term will be given on February 25th by Dr. A. Morley Davies, on "The Illustration of Types of Land-forms from Ordnance Survey Maps." The lecture will commence at 7.45 p.m. at the London Day Training College, Southampton Row, London, W.C.

THE twelfth annual general meeting of the Moral Education League will be held at Essex Hall, Essex Street, London, W.C., on February 21st, at 8.15 p.m., when Miss Margaret McMillan will deliver an address on "The Place of Imagination in Moral Education." Cards of invitation can be obtained by applying to the Moral Education League, 6, York Buildings, Adelphi, London, W.C.

SCOTTISH.

THE annual Congress of the Educational Institute was held this year in the Adam Smith Hall, Kirkcaldy. The feature of the meeting was the address of Sir James Donaldson, the principal of St. Andrews University, and "the Grand Old Man" of Scottish education. Sir James Donaldson, who is himself a past-president of the institute, took as his subject "Education in Scotland from 1850 to 1872." During that period he showed that education was by no means neglected. Teachers possessed an honoured and assured position. Their tenure of office was *ad vitam aut culpam*; their maximum salary was 400 merks (Scots) and their minimum 300 merks, paid by the heritors of the parish. In addition, they got the fees and had a house and garden provided for them. There were regular examinations of the pupils by the Presbytery, and these were attended by the parents and people of the parish in great numbers. In that way the whole district was led to take an interest in the education of every child. Education, indeed, formed the subject of conversation in every house. It was not easy to exaggerate the importance of the family in the work of education, and the success of the old Scottish education had its roots in the keen family interest that marked it. To-day that interest seems to be going further and further into the background. The educational problems of the times are many and difficult, but they are not entirely new; and Sir James Donaldson went on to describe with quiet humour how some of these problems were considered long ages ago by thoughtful Babylonians, Greeks, and Romans. He also read an ancient Babylonian inscription to show that canvassing for teaching posts was not unknown to the ancients.

DR. CHARLES M. DOUGLAS, in the course of an address, said that educational methods and results have been subjected to constant criticism on the ground that the conditions under which children would have to live and maintain themselves are being neglected. In the Report of the Poor Law Commission this criticism occurs in a highly accentuated form bearing upon the unskilled and underemployed worker. To place upon the school the responsibility for these by-products of a ruthless civilisation is utter foolishness. At the same time, the school curriculum should be remodelled to suit the new and revolutionary forces in industry. In particular, it is desirable that a beginning shall be made in developing an aptitude for manual and physical work. Over and above all this,

immediate steps must be taken to diminish or to stop altogether the employment of children in attendance at school.

A CASE of considerable interest has just been decided by a full bench of Scottish judges. Briefly, the question to be decided was this: Has a School Board power to set apart certain school buildings for the sole use of Roman Catholic pupils, to staff them with Roman Catholic teachers, and to support them from the school funds? The Court of Session has unanimously decided in favour of the School Board. The Lord Justice General, who delivered the principal opinion, said, in effect, that the School Board could teach any form of religion it pleased, always provided the provisions of the "Conscience Clause" were attended to. So far as legal restrictions were concerned, School Boards might teach any religion known on the face of the earth. If they introduced a religion that was distasteful to the great body of the ratepayers, the latter had the remedy in their own hands—they could elect a new School Board. Presbyterianism was the form of religion taught in the great majority of Scottish schools simply because that was in conformity with the wishes of the vast majority of the population, but it was well known that in certain of the outer islands the Roman Catholic religion was the official form in the public schools, and the Protestant pupils in such schools came under the "Conscience Clause." This decision is likely to have an important bearing on the educational policy of Roman Catholic managers. If they can secure rate aid for their schools, together with powers to teach their own religious tenets, they will not long remain content to bear unaided the burden of their support.

A MEMORANDUM has been issued by the Education Department modifying the regulations for the presentation of junior students at the leaving certificate examinations. Hitherto they have had to be presented on the higher standard in all the subjects of their course, no matter how inadequate was their knowledge of some of these subjects. In future they are to be presented in the higher grade in those subjects only in which they have reached a suitable stage of advancement.

PROF. PHILLIMORE, Glasgow University, speaking at the opening of the new building of the Glasgow School of Art, said that among the bodies interested in the brilliant and unbroken progress of the school the University should not stand last or lowest. The relations between the two had always been sympathetic, and he hoped they would become more definite in the future. On both sides there was a readiness to discuss terms of closer relations. It would be of enormous advantage for the social and general well-being of both bodies if they fraternised more closely. On one hand it would be for the benefit of the artist or sculptor to have the literary side cultivated more, while it would be greatly to the advantage of those who taught intellectual discipline to have that discipline corrected by personal contact with those engaged in the higher branches of plastic art. He trusted that the next important event to be celebrated in connection with the School of Art would be the alliance of the School and the University.

AT a meeting last month of the Glasgow Branch of the Educational Institute, Prof. J. J. Findlay delivered an address on "Demonstration Schools." Prof. Findlay at the outset alluded to the scepticism among the majority of teachers as to the value of any serious experimental or psychological study of education. Still, progress is being made, and there is now a more general recognition that ethics, psychology, and physiology have real relations to school problems. The purpose of the demonstration school as a school is to serve as a bridge between the psychological laboratory and the ordinary school, but in addition it is to be the practice ground and workshop of a department of education and training. Such schools must be of a type which will secure the uniform attendance of scholars as long as possible. A large school is not wanted, but just enough pupils to make the education real. In Manchester classes of twenty are found to work very well. Such schools must not be hampered by Government codes or Government inspection of the ordinary kind. As to whether children suffer educationally in this class of school, Prof. Findlay said that it is the universal experience in all kinds of experimental and model schools that the children are exceptionally sharp and alert. There is so much outside interest and exposure to public view in these schools that children are bound to be well cared for.

THE Educational Institute of Scotland has had under consideration the question of sub-intermediate schools, and has come to the conclusion that such schools are an essential part of the provision for secondary education in many districts. These schools in rural districts would stand midway between the elementary schools and the intermediate and secondary schools. At present many children have to go into lodgings at the age of twelve or thirteen in order to secure the advantages of secondary education. Parents naturally object to send their children from home at this early age, and consequently the latter are debarred from pursuing higher studies. The recognition of sub-intermediate schools with a less elaborate equipment than the ordinary secondary schools would enable every parish to make some provision for a course of secondary education. The great mass of the population must receive the secondary education near their homes or go without it altogether, and it is on the recognition of this fact that the institute's proposal of sub-intermediate schools is based.

IRISH.

THE Intermediate School Grant for the year 1909 was paid to the schools just before Christmas, and has been calculated on the following scale, which is slightly in excess of the rates for the previous year:

For each Pass.

Grade	£	s.	d.
Preparatory	3	10	0
Junior	7	0	0
Middle	10	10	0
Senior	15	15	0

For each Pass with Honours.

Junior	10	10	0
Middle	15	15	0
Senior	23	12	6

THE Most Rev. Dr. Walsh, Roman Catholic Archbishop of Dublin, has resigned his seat on the Board of Intermediate Education. His reasons have not been stated, but the vacancy is one that should be filled by an expert with some knowledge of the practical working of Roman Catholic schools. This would help to smooth over some of the difficulties that have arisen between the Board and the Roman Catholic schools in connection with inspection.

THE Intermediate examinations will this year begin on June 13th and continue every weekday until June 23rd. The arrangement of hours is similar to that of last year. The hours are on most days 10 to 12 and 4 to 6, with

special papers in the junior, middle, and senior grades from 1.30 to 3.30. The English paper, however, is extended in length to two hours and a half, and is arranged for June 14th from 4 to 6.30. This will be a very heavy day for most candidates, as there is a Latin paper in the morning and a Latin special paper in the afternoon. This is unfortunate; but in other respects the time-table seems well arranged, the order of certain subjects being different from last year. Some people, however, will wonder why the whole examination was not a week later, as even then it would be finished by the end of June.

THE Department of Agriculture and Technical Instruction has issued a circular announcing an examination in the principles, methods, and history of education, with special reference to science teaching. This is for teachers of experimental science in secondary schools, whose qualifications will not in future be considered complete without passing this or a similar examination in some recognised university. There will be an examination in June of each year, and this year it will be held on June 25th in Dublin. There will be no fee for this examination, applications for admission to which must be made before May 25th. The chief heads of the examinations are: the ends of education; curriculum; endowment of the child; intellectual, emotional, and active factors; stages in development; differences between children; characteristics of curriculum and methods of instruction in science; correlation of science with other objects; mental functions involved in the acquisition of knowledge; attention, imagery, exposition; inductive and deductive processes; methodology of instruction in science; laboratory work and class teaching; history of a special branch of science; class management; order and discipline; note-books and text-books; correlation of science teaching with English and drawing; pictorial illustrations, diagrams, and models; construction of apparatus; supplementary means of instruction; laboratory organisation and management. The following books are recommended: Raymont, "Principles of Education"; Munroe, "Briefer Course in the History of Education"; McDougall, "Social Psychology"; Adams, "Herbartian Psychology," "Exposition and Illustration"; Adamson, "Practice of Instruction"; Jevons, "Principles of Science"; Armstrong, "Teaching of Scientific Method"; Mack, "Science of Mechanics"; Pearson, "Grammar of Science"; Thompson, "Science of Life."

THE National University has issued a notice directing the attention of the graduates and students of the late Royal University of Ireland to section 13 of the Irish Universities Act, which provides for the registration of graduates of the Royal University as graduates of the National University of Ireland, and also for the continuation of the studies and examinations of students of the Royal. The section runs thus: "All terms kept and examinations passed by any graduate or student in the Royal University of Ireland shall on the dissolution of that University be deemed to be terms kept and examinations passed at the university at which he is entitled to be registered as a graduate, if a graduate, and in any other case at either of the two new universities at the election of the student, and the governing body of each of the two new universities shall, so far as practicable, provide for any such students obtaining degrees on conditions not more onerous than those under which they could obtain corresponding degrees in the Royal University of Ireland." Students who wish to enter the National University under this section should apply to the Registrar of the National University in Dublin, and similarly those who wish to enter the Queen's University, Belfast, should apply to the Registrar of the latter university.

WELSH.

NEW Council schools have been opened at Willowtown, Ebbw Vale, and at Blackwood in the Tredegar group of Council schools. At the former, accommodation is provided for 800 scholars. It is said that at Ebbw Vale there is the highest education rate in the county, since it has more children proportionately to educate with a less rateable value than elsewhere. At the opening of the latter school, attention was directed to the commencement and progress of education in Wales, where it was remarked that the early endeavours of the pioneers were not emulated by their followers. It was also stated that there was a lack of appreciation by parents at the present day of the great facilities of education, having regard to the thousands of pounds spent upon it. Apparently it is felt (as might be expected) that the enthusiasm evoked by a voluntary system of education is not necessarily shown where education is compulsory, nor is it certain that all parents appreciate schools so much when they pay no school fees as when they paid the school pence.

THE disturbances at the University of Wales degree-day ceremony, and at Sir Oliver Lodge's address at the University College, Cardiff, have led to an inquiry by the College Council. The following resolution was carried by a large majority: "That the Council strongly condemns the conduct of those students who were guilty of disturbing the proceedings at the Sir Oliver Lodge meeting and also at the degree-day ceremony, and approves the action taken by the Principal and the Senate with respect to these disturbances. The Council relies upon the good feeling of the students in maintaining in future the honour of the college and themselves." We regret that there should be any attempt to explain disturbances at academic functions so as to give the appearance of justifying them. There is no reason that the pursuit of knowledge, to say nothing of culture, which it is the main business of national colleges to promote, should be associated with disturbances which would take away even from the dignity of any non-academical gathering.

MRS. MARY DAVIES is doing a great service to Wales, by her energy and enthusiasm, in addressing meetings to help the aims of the Welsh Folk Song Society. The great work done by Mr. Cecil Sharp in collecting hundreds of folk-songs in Somersetshire and other parts of England needs supplementing by co-operation throughout the length and breadth of Britain. There can be no doubt that Wales offers great possibilities for such search and research. There is probably not a county in Wales in which many old folk-songs could not be unearthed, by simply visiting all the villages and isolated hamlets, and getting into touch with the older inhabitants, inducing them to offer, naturally and simply, all their treasured-up song-lore. Individuals were known in the last generation to have old ditties and songs in such number that it would take a month or two to go through their *répertoire* steadily for an hour or two a day. Mrs. Davies is doing an excellent work in inviting the younger generation, especially students at the University Colleges of Wales, coming from every district of Wales, to seek for such songs, and to note them down carefully, tabulate them, and reproduce them for the collection made by the Welsh Folk-Lore Society.

ONE of the most curious features of the recent Parliamentary election has been the omission from any prominence

of the education question. At the last election, it was regarded professedly as a question of life and death by many people. The fact is, of course, that the present phase more nearly represents public opinion. Unfortunately there is but little interest in the real problems of education amongst politicians. It is merely the sectarian disputes which stir the spasmodic excitement. The quiescence is more hopeful. At the prize day of the Festiniog County School, Mr. William George, brother of Mr. Lloyd George, spoke on the "revolution" effected in Wales by the intermediate schools. Thousands of children had obtained a secondary-school education, hundreds had entered the colleges, "shedding lustre on their own name and that of their country." Much had been done for the average boy. The Board of Education had recognised the value of the Welsh language, but there must further be "the practical and hearty recognition of the distinctive features of Welsh life and character." There must be a Board of Education for Wales. In the meantime, Mr. George urged, there is needed "a clearer declaration of policy from the present leaders of Welsh education for the guidance of those who do the spade work." One wonders if it is too democratic to suggest that life develops "from within," and that probably those who are most intimately in touch with the real needs of education are the teachers. But these experts are clearly not "the leaders"; they are the educationists, who must receive the "declaration of policies" from non-teachers, and as employees carry out the shifting policies as required first by one board, then by another, or by one county council as it gives place to another, or by the changing views of directors of education. Why not consult the teachers themselves for policies, founded on knowledge and experience, instead of regarding them as the servants to carry out the views of "leaders," who sometimes have not taught in a school for a single year?

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Dent's First French Book. (Twenty-first English Edition.) By S. Alge and W. Rippmann. 184 pp. (Dent.) 2*s.* net.—There is no need to introduce this book to our readers, as there must be few among those who have been converted to the New Method who have not seen it and used it. Not many First French books attain a sale of 150,000 copies in eleven years. Still, there are a few improvements to note in this new edition. The *format* has been enlarged, and the number of pages has been reduced from 277 to 184, although the amount of matter has been increased by the incorporation of Mr. Norman's supplementary exercises. The phonetic transcription of the earlier exercises has now been omitted, and is published separately. The pictures are coloured in imitation of the larger wall pictures, but we regret that a town picture has not been added or substituted for one of the agricultural ones; it would be so much more real to most of the town dwellers. Some of the questions still sound awkward, as "Qu'est ce que Monsieur Auguste fait?" (p. 45). The report of the last Oxford Local examinations lays stress on the ignorance of grammar and weakness of translation into French, which are attributed to unintelligent teaching on conversational lines. Most teachers are agreed that the New Method is excellent for interesting children in a foreign language, and they make great progress in conversation and reading. But some bridge is necessary to take them from this conversational knowledge to an accurate grammatical grasp of the language. The same problem is being felt in France, where the New Method was instituted by ministerial decree, and where it goes well for the first two or three years. Then comes the difficulty, and we wish Prof. Rippmann would write the book to transport French pupils over this chasm.

A Modern French Reader. By A. D'Ardenne de Tizac. 80 pp. (Alston Rivers.) 1*s.* net.—This reader is mainly historical; one extract deals with Louis XIV., five with the eighteenth century, ten with the Revolution, eighteen with more recent times, four with the French colonies, and six with Paris. To each piece is prefixed a short note referring to the subject-matter or the author, and there are occasional footnotes explaining difficult expressions, allusions, &c. On the whole, the selection is a good one. The book is neatly got up, but is not free from misprints (*e.g.*, *dépénse* and *ronguer*, p. 17; *venaît*, p. 21; *le cœurs*, p. 28; *aprés*, p. 30; *françàis* and *génèral*, p. 37; *périsent*, p. 40; *celà*, p. 42; *chamarrès*, p. 54; *ridingotes*, p. 55; *da côté*, p. 61; *débarrasé*, p. 62; *variétès*, p. 69; *une* [for *me*], p. 74).

Classics.

The Phoenissae of Euripides. Edited by A. C. Pearson. 1+246 pp. (Cambridge University Press.) 4*s.*—This is an admirably edited book, except that it has in some degree the general fault of the Pitt Press Series in trying to meet the wants of boys as well as scholars. Some of the notes are useless to scholars, although not very many: but no doubt the publishers are to blame for this fault. For the rest, the notes are very good indeed, sound in scholarship and intelligent in explanation. The introduction is an examination into the sources of the play, the state of the text, and particularly the vexed passages in the latter part. For the sources Mr. Pearson has not much that is new to tell us; but he states the facts clearly and well. As to the text, he believes that we have before us an acting edition, made in the fourth century, perhaps, by someone who could write Greek verse but was no poet, and who put lines and passages of his own in place of the poet's. The editor's treatment of the text, with the few emendations he adds, takes us one step further than his predecessors. This is a book to be recommended.

Caesar Imperator: an Elementary Latin Reader. With vocabulary and exercises on the text. By J. W. E. Pearce. viii+126 pp. (Dent.) 1*s.* 4*d.*—This is a good book. The text is simple and easy, and introduces many common constructions over and over again. The vocabulary is brought into line with the recommendations of Mr. Arnold's "Basis Latina." The exercises are: Latin questions to be answered in Latin; questions in English on accidence and syntax; and sentences to turn into Latin. Thus the novice-teacher will be guided in applying new principles. It should be said, however, that so soon as the novice becomes a practised teacher he ought to do the questioning by word of mouth; if he trusts to books for this, or for the form of his questions, his work will be as mechanical as any other kind. We regret that Mr. Pearce has not told us (i) what stage this book is meant for; (ii) how much grammar must be known when it is begun; (iii) how the vocabulary is increased. If it answers to the sections in "Basis" this ought to be stated. It will not do for the beginner.

The Iliad of Homer. Translated into English prose by E. H. Blakeney. Vol. i. Books I.–XII. xxxii+352 pp.; with frontispiece. (Bell.) 5*s.*—Mr. Blakeney here publishes in a volume the first part of his translation of the

"Iliad," to which he appends Calverley's verse translation of the "Catalogue of the Ships," a note on Homer, and a list of similes. We have already reviewed a number of the books from the translator's pen, and it is not necessary to say more than that this volume has the same character. It is provided with notes, partly on the text or translation, partly parallels from other literature, or illustrations of custom and lore. We would gladly have seen the literary illustrations more numerous; some of those given are rather fanciful than apt, but many are good.

A Latin Anthology. xii+188 pp. (Macmillan, Golden Treasury Series.) 2s. 6d. net.—The editor of an anthology should give his name, since so much depends on taste, and so few have it. We cannot feel that the present editor has quite earned a place in the Golden Treasury Series. It is true we have here a large number of beautiful poems; and with Horace and Virgil it is difficult not to please: but a number of poems have been omitted which should, by common consent, we believe, find a place in any anthology. To take a few instances: Catullus's "Epithalamium," or part of it; Horace's "Iustum et tenacem"; Tibullus's "Ambarvalia," occur to the reader at once. But we gladly admit that the book contains a number of good things.

English.

The Teacher's Manual of Rowe's Rapid Method. By Blanche Hanbury Rowe. 210 pp.; with three coloured plates. (Dent.) 2s. 6d.—This book is the teacher's companion to the booklets called primers, which are published at 4d. and 5d. The booklets are normal, except that silent vowels and consonants are erased in the word-lists. Roughly, there is an attempt to simplify spelling from the very beginning: hater (hatter), suni-er (sunnier), serg (serge), or (ore), inspir (inspire), are examples. Now these printings—the author prints the silent letters and draws a pen through them—look as though the writer did not study phonetics: but when we turn to the larger volume we find this is by no means the case. The three parts of good method are (we are told): (*a*) to proceed from the known to the unknown; (*b*) to arrive at the difficult *via* the easy; (*c*) to *enable*, without cramming, the learner. To anyone much interested in speech the book is quite fascinating: but the child who gets his pronunciation at home and preserves it, notwithstanding school, will find, it seems to us, considerable difficulty in assimilating so much phonetics. Yet the wording is most interesting and, apart from the colour-schemes, easily understood by the adult reader. We direct special attention to the rule on R, a sound most inadequately treated by writers on phonetics. Welcoming as we do Mrs. Rowe's book, we should like to ask two questions: (i) What statistics are there about the time taken in learning to read? (ii) What authority is going to stop the present rage for meticulous work in phonetics? A close study of phonetics is a luxury for the idle few, and if it produces anything at all it will produce a new English—"phonetic English."

Composition, Oral and Written. By C. S. Baldwin. 364 pp. (Longmans.) 5s.—Prof. Baldwin has written and edited many books. But, as in a previous notice on another work of his, we find a good deal of his work unintelligible—for English schools. In the very first set of subjects for essays are—the Increasing Use of Reinforced Concrete, Sunday Baseball for Workmen, Italians make Good Americans. The book is well planned and, with one serious omission, complete. It is interesting and varied. The omission is that it does not deal with oral narration as an art; and music in speech is not touched. The best introduction to composition is speech: not the essay rhetorical, but the slowly but exquisitely polished story. On this art there are no books; and of this art there are very few expositors. Such a book by Prof. Baldwin or by any accredited person would be very welcome.

Masters of Literature. Carlyle. By A. W. Evans. liii+378 pp. (Bell.) 3s. 6d. And in the same form: *Fielding.* By Prof. G. Saintsbury. *Scott.* By Prof. A. J. Grant. *Defoe.* By John Masefield.—While most books on English literature are guides to cheap criticism, this series is a guide to admiration. Ten authors have now been edited in this fashion. Great, characteristic, and long extracts are given, and the author is so well represented that an average student has the author—in one volume. The introductions are copious, easily written, fair, and not too critical, and all are done by well-known people. The objection, of course, is that we have only a bit of Carlyle and of Defoe, but not everyone has all Carlyle on his shelves, and hardly anyone buys "Colonel Jack" or the "Hymn to the Pillory." The volumes have their distinct use, and they are handsome to look at and very cheap. It is probable that as this series becomes known it will become very popular; and when it is extended to Molière and Schiller and Cervantes (even though they be represented in good translations only) it will fulfil its object. We have had enough of secondhand criticism: here we have text and appreciation—together.

History.

English History in the Class-room. By G. M. Gwyther. xiii+189 pp. (Longmans.) 2s. 6d.—This book is "not meant for forms below the average age of fourteen," and "it is presumed that the boys will have gone through a course of English history in narrative, and also through some elementary outline of European history." For those thus prepared and for their teachers it will serve as a useful stimulant to thought and reading. It consists of a series of notes, quotations, questions, and suggestions, too varied in character to be adequately described, but covering the whole period of English history, and supplemented by a bibliography and further help in the way of appendices.

Historical Evidence. By H. B. George. 223 pp. (Clarendon Press.)—This is a book written for the average man, avoiding technicalities, and setting forth in simple language the principles which guide historical students in their research, both in the balancing of evidence and in the formation of opinions. Mr. George lets us, as it were, into the laboratory of our masters and teachers. It will be read with interest and profit by many students of text-books; and the only danger, perhaps, is that the sceptically minded may be confirmed in their scepticism, but that will be only because they mistake the caution of the writer.

A First History of England. Part VII. By C. L. Thomson. xi+303 pp. (Horace Marshall.) 2s. 6d.—We have already noticed the other "parts" of this history as they were published. In this Miss Thomson has fulfilled the request of various teachers to complete the story, and has given a clear and pleasantly written account of the purely political history, domestic and foreign, from 1820 to 1901, though the story of the last sixteen years is only briefly told. Economic and social questions are touched on only so far as they were connected with legislation, and ecclesiastical questions are generally omitted. The story is most detailed in the account of the Crimean War and the

Indian Mutiny. There are a few slips, such as that on p. 11, where President Monroe's message is said to be addressed "to the Powers." Each chapter ends with a list of the more important members of each ministry, and there is an index as well as thirteen good portraits.

Miscellaneous.

The Mother's Companion. By Mrs. Cloudesley Brereton. 162 pp. (Mills and Boon.) 2s. 6d. net.—This is an excellent book, written with cheerful and deep insight, with a sympathy which deplores the failures that are too much in evidence because it understands the importance of all that is lost through ignorance. It might be described as an essay in eugenics, founded, as that science is, on Herbert Spencer's maxim as to the primary necessity of being a good animal. But it is "a talk" rather than a lecture, and withal so rich in that most uncommon of all commodities—common sense—that the creed of simple truths which makes for the real happiness and comfort of human life, is unfolded as a kind of luminous revelation. Mrs. Brereton bases her arguments on the safe assumption that the making of a happy home lies in the hands of the wife and mother, and that no woman can hope fully to succeed in realising that aim unless she is equipped with a knowledge of the duties which that dual relationship entails, and is possessed of the physical capacity for discharging them. Health, knowledge, training: that is her triad of success; and even for those who have already met the disappointments entailed by lack of one or other of them, there is an abundance of helpful counsel, a store of reviving encouragement, in her pages; help and admonition for the worried mistress of the household, whatever her social position; and admirable advice for the training of her daughters. If the importance of the subject were but duly realised, the education of women would be remodelled upon lines which would raise the science and art of home-making to the place it deserves in the economy of the nation. In the hands of the woman, as Sir Lauder Brunton puts it in his preface, "lie the happiness of the husband, the health of the children, and the comfort of the household." When knowledge and training have taught her the power of her influence for good, the value and the nobility of her sphere of usefulness, that power will not only secure the health and happiness of her own home, but, by teaching others, "will create national health and national happiness."

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 Teachers' Registration Council.

I have read Dr. Gow's article in The School World for December on the Teachers' Registration Council and the Conference at Clothworkers' Hall (November 13th), and it appears that a few brief remarks on that article are called for from me.

As Dr. Gow and the Federal Council have the same object in view, namely, the formation of a strong and efficient council to deal with registration, I am sure he will not object if I endeavour to correct a few misapprehensions which might arise in the minds of an ordinary reader after perusing his article.

The work of Dr. Gow and his committee before it adjourned brought the question of registration to such a point that there was a general feeling that it could not be left where it was. The conference, therefore, was the natural outcome of the work of that committee.

Thirty-seven associations of teachers in schools were represented at that conference, and all the associations were of a national character. The conclusions arrived at may therefore be considered to be fully representative of the views of the teaching profession, and the unanimity displayed on all the points raised was so remarkable that it may safely be hoped that a teachers' register will soon be possible.

Dr. Gow is right in saying that the scheme for a first council was of primary importance, but he is strangely in error when he states that it was not put to the meeting. It was included in Resolution 5, and the proposer of that resolution (Mr. Greene) devoted two-thirds of his speech to an explanation and defence of the scheme. The fifth resolution was in two parts, and on the voting paper there was a separate vote for each part, the second of the votes referring to the scheme only. Dr. Gow himself voted for it.

The new council will not consist of forty or fifty members, but of thirty-six—nine for each branch, with a possible twelve for the fourth branch if it is found desirable. The number of members will certainly, therefore, be under forty.

These will, no doubt, be divided into sub-committees to deal with different parts of the work; and Dr. Gow's criticism that one half of the council will not understand the business of the other half will, I think, not be borne out in practice.

Dr. Gow says that the scheme is founded on no principles except that of shutting the mouths of all noisy objectors. The first five resolutions submitted to the conference were all concerned with the "principles" on which the first and succeeding councils are to be formed, and I believe I am right in saying that this is the first occasion upon which proposals for a registration council have been on any organised plan at all.

He asks, "Why are university teachers excluded from the council?" The answer is, "They are not excluded." Nothing, indeed, was further from the thoughts of the committee than to exclude them. It was stated at the conference that a distinct place was assigned for them in the fourth branch. University teachers were not directly represented at the conference, for very obvious reasons.

He also asks why no representatives are assigned to the Classical and other associations connected with special subjects. In the first place, it has never been seriously maintained that there can be representation by subjects, and the interests of these associations are sufficiently covered by other associations. This is the view of prominent members of these associations; and, lastly, Dr. Gow's committee did not assign them representation in its scheme.

Of course, the justification for asking for the money lies in the fact that, when the abolition of the old register was announced, a definite promise was also made that the fees would be returned. If the new register is to include the old, the fees might as well be paid over in a lump sum; but if the Board of Education prefers to return them to the individuals registered, those individuals have them in hand to pay for new registration, and the new Registration Council will start with its hands free—and also empty.

J. Easterbrook.
(Chairman of the Federal Council of Secondary School Associations.)

Grand Hotel, Kandersteg, December 22nd, 1909.

MR. EASTERBROOK has convicted me of a mistake for which I must apologise. The scheme, it seems, *was* put to the meeting. I submit, however, that my mistake was trivial, since I founded no argument on it, and venial too, for, in fact, the scheme was put so obscurely that I voted for it unawares, and ten societies, out of thirty-seven present, omitted to vote on it at all. In return, I will convict Mr. Easterbrook of a little mistake. He has no right to say that the council will consist of thirty-six or thirty-nine members. There are to be thirty members fixed, with "a certain number" of co-opted members and "a certain number" of Crown nominees. Mr. Greene is reported as having said that "it was impossible for a council of forty to represent every section of the profession." But that is just what, *ex hypothesi*, this council is to do, and Mr. Greene, I opine, would not be surprised if it rose to fifty members. But my difference with Mr. Easterbrook does not depend on such trifles. The real difference between us is that he says he has "principles" and I say he has none. A "principle," I take it, is a rule of conduct founded on reason and applicable more than once. Mr. Easterbrook points to his first five resolutions and says they are "principles." They seem to me to be merely the scheme over again, with the numbers left out. They say, in effect, we will have on our council (*a*) Toms, (*b*) Dicks, (*c*) Harrys, (*d*, 1) Georges, and (*d*, 2 and 3) "a certain number" of other persons, and they actually leave it to the Board of Education "to define the term 'teacher' so as to include all persons coming under (*a*), (*b*), (*c*), (*d*, 1) in the branches named above." If Mr. Easterbrook had had principles he would have defined "teacher" for himself, would have fixed the number of his council, would have explained why he admits (*e.g.*) the Association of Teachers of Domestic Science and excludes (*e.g.*) the Association of Public School Masters, and finally he would have shown some right to the £12,000 that he asks for. My committee had principles at first, but not the pluck to stand by them. Mr. Easterbrook can therefore cite its decisions (or rather proposals) as in his favour, but he ought not to cite them against me, for I was unwilling to carry them out.

JAMES GOW.

Contour-maps and the Making of Panoramic Views.

CONTOUR-MAPS are beginning to form an essential piece of apparatus both in the teaching and in the examination of geography, and in both cases there has arisen a tendency to test the pupil's power of interpreting the symbols of such maps by asking for a verbal description of a view across a stretch of country so delineated. This view may be from a spot on a valley floor up the valley sides towards culminating peaks, or it may be from a peak across a valley towards a gap through the opposite ridge, or it may be from a pass in hilly country. Whatever the standpoint of the observer, it usually happens that the pupil has to decide whether certain places shown on the map can be seen from this viewpoint; in the first case, the peak may show on the map, but be hidden behind a plateau edge; again, how much of the river, which winds, through the gap is seen; or, how much of the lowland and of the valleys is hidden by intervening ridges? are questions which the pupil has to determine.

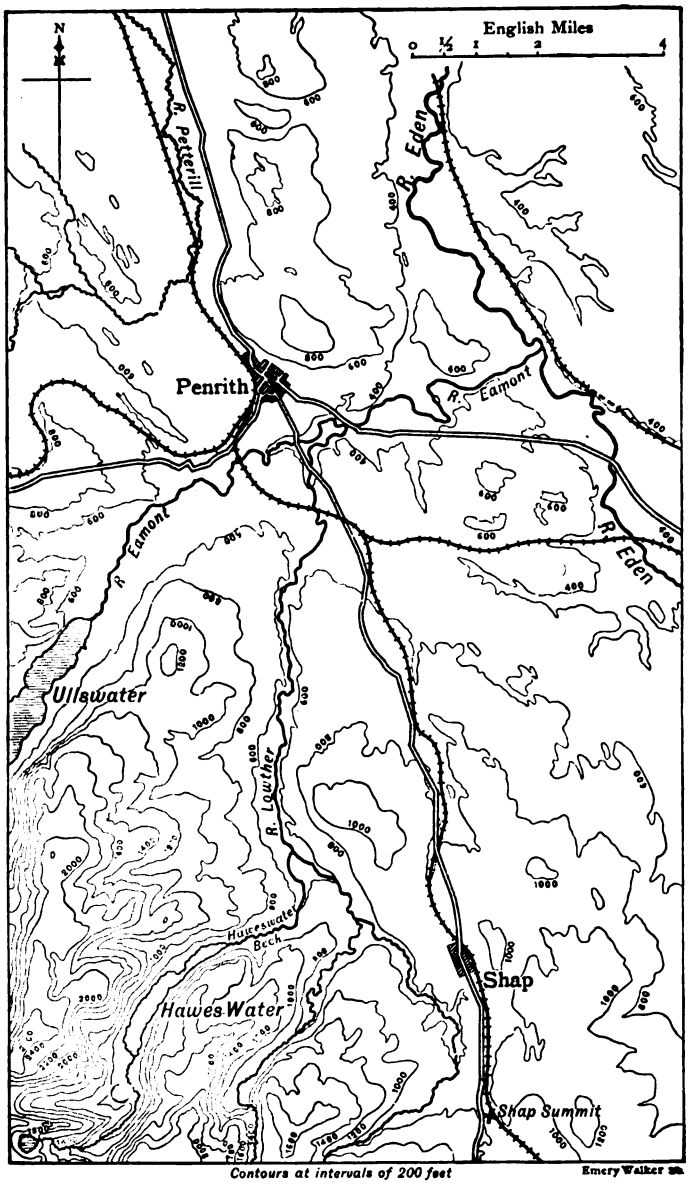

FIG. 1.

The following method is submitted as an expeditious and sufficiently accurate means of determining what is visible. For the sake of illustration, the view northward in the direction of Penrith from Shap Summit has been taken (Fig. 1).

Step 1.—A sheet of plain transparent paper is laid on the map; six converging lines are drawn to Shap Summit, O in Fig. 2. These lines are chosen to suit the map; they give the boundaries of the view and those lines of sight which seem from the map to promise greatest difficulty of interpretation. These lines are OA, OB, &c. (Fig. 2). Marks are made along these lines where the contour lines, the rivers, and the roads cut across each line of sight, and thus Fig. 2 is obtained.

Note.—Figs. 2 and 3 have both been reduced in size.

Step 2.—Assuming the height of the point of observation to be 900 feet above sea-level, the table below is constructed. Col. 1 names the lines of sight and numbers the points marked from O. Col. 2 gives the differences above or below 900 feet of these points. Col. 3 gives the distances of these points along the line of sight from O in tenths of an inch; this is done rapidly by laying the tracing paper over paper marked in inch squares in red and in

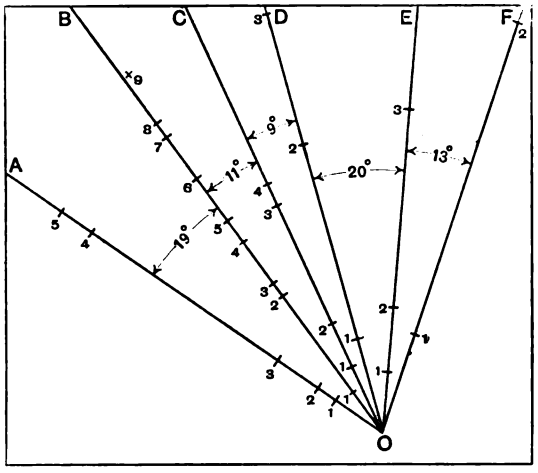

FIG. 2.

tenth of inch squares in blue. Col. 4 is obtained by dividing the results of col. 2 by those in col. 3. The angles between OF and the other lines of sight are measured and marked as in Fig. 2.

(1) Line of sight		(2) Diff. in height		(3) Distance from O		(4) (2)+(3)
OA	1	−100		3		−33
	2	100		5		20
	3	300		8		38
	4	500		23		22
	5	1100		25		44
OB	1	−120		3		−40
	2	−100		11		−9
	3	−120		12		−10
	4	−300		15½		−19
	5	−330		17		−19
	6	−300		20		−15
	7	−100		24		−4
	8	100		25		4
	9	350		30		12
OC	1	−130		5		−26
	2	−100		8		−12
	3	100		16		6
	4	150		18		8
OD	1	−100		7		−14
	2	−100		20		−5
	3	−300		30		−10
OE	1	100		5		20
	2	100		9		11
	3	−200		17		−12
OF	1	150		7		21
	2	−520		30		−17

Step 3.—On paper marked with squares of one-tenth of an inch each side a rectangle is made so that the base line of 36 sqq. represents 72 degrees and the vertical line yields a scale suitable to the values in col. 4. In this case 1 inch = 48. The edges of the rectangle represent the lines OA and OF, and verticals are placed according to the scale of the base line (1 sq. = 2 deg.) to represent OB, OC, OD, OE. Using the vertical scale, marks are made on these verticals to represent the values given in col. 4, either above or below the zero line, which is placed halfway up the rectangle. In marking the line OA, it is found that point 4, which is further away from O than point 3, is lower than point 3; therefore this point is omitted; similarly points 3, 4, 5, 6 in OB, 3 in OD, and 2, 3 in OE.

The tracing paper (Fig. 2) is replaced over the map, the direction of the ridges is examined in relation to the lines of sight, and the sky-line is put in the rectangle; this is made up of four parts: the hill almost in the middle of the view, the distant ridge to the west, the near ridge to the east, and the ridge which lies behind this a little further away. The near ridge on the west is then inserted in outline, the river and road are then added, and the slopes shaded. The result is shown in Fig. 3, which has been traced from the drawing on squared paper.

It thus follows that the view from Shap Summit is limited; that the lakes are hidden; that the Eamont, the

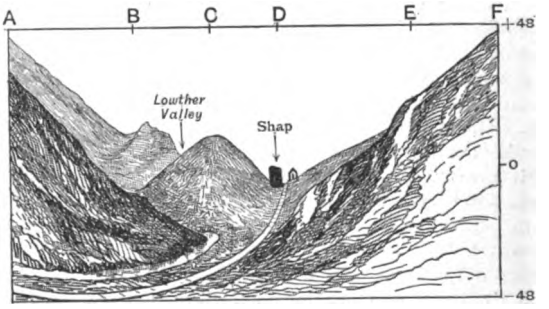

FIG. 3.

Eden, &c., are invisible; that the road is lost to view after it passes through the village of Shap; that the valley of the Lowther is suggested between the hill and the distant ridge on the west; and that a valley is suggested between the two ridges shown on the west.

It is suggested, also, that in addition to the help obtained in the interpretation of contoured maps, the results obtained by this method form a training in the interpretation of view photographs either in the form of lantern-slides or as prints.

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THE ORGANISATION OF A LARGE SECONDARY SCHOOL.[1]

By H. J. SPENSER, M.A., LL.D.
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IN discussing with you the organisation of a large secondary school, I do not wish to be didactic or dogmatic, but it has been almost impossible for me to avoid drawing on my personal experience. Mr. Kipling has told us that "there are nine and forty ways of constructing tribal lays, And every single one of them is right." It is this variety of successful solution which baffles the foreign educational expert, when he visits our schools. My friend Dr. Walter, of the Musterschule at Frankfort, once told me that, when he first came to England, he was convinced that nothing short of national ruin could be the result of our educational chaos, and that he held this opinion until he got to know and appreciate the character of the teachers. It is a commonplace that the way to be interesting is to be personal, and I shall make no further apology for the personal note of this paper. I have taught in English and Scottish schools, of varying type and system, beginning at an old-fashioned English grammar school, which had one class-room where the headmaster taught, and a big schoolroom wherein six other classes were taught; a school in which the curriculum consisted almost entirely of Latin, Greek, and Divinity, varied by two periods a week devoted, or sacrificed, to French and German, and one to chemistry! But within the last ten years I have been called on to reorganise two large secondary schools, one of 1,000 boys in Scotland and one of 400 here, in London. The diagrams illustrate the main outlines of the schemes of reorganisation.

Diagram No. 1.—This school of 1,000 boys had been conducted as five separate departments (classics, mathematics, English, French, and German), with practically independent organisations. There were no "sides," no "forms," no "curricula." The curriculum of the particular boy was chosen by his parents, the janitor and the rector being occasionally taken into consultation. The classes which a boy took were paid for *pro rata*. "Every parent," I was drily assured by a local dignitary, "had an indefeasible right to have his boy badly educated." That the results were not what might have been imagined, that, in fact, all things considered, they were surprisingly good, was due to the keen intelligence of the Scottish parent, to the natural industry of the Scottish boy, and to the devotion of the teachers. The classes in the various departments varied in number and standard according to the views of the head of the department and the number of assistants at his disposal, and the attendance varied according to the nature of the counter-attractions which the city offered. Luckily the prevailing climatic conditions were what are euphemistically described as "soft."

The task was to unify and simplify, to develop the school as a corporate whole, to co-ordinate and control the work in all departments from the centre, and to offer a number of *table d'hôte* curricula in place of the existing *à la carte* bill of fare. The change from the old style to the Form-system required a consideration of the case of every boy in the school; the average powers of every boy had to be estimated before he could be assigned to a suitable form on one of the sides of the school. Five years later a similar reorganisation had to be effected in the school of which I am at present headmaster, and which had previously been conducted on the class system. Here again a similar process had to be adopted.

Diagram No. 2 will show the nature and scope of the reorganisation. On comparing the diagrams you will notice characteristic differences:

In No. 1, a school of 1,000 boys, there are, ultimately, four complete curricula, corresponding roughly to the well-known German types:

The Classical side	...	corresponding to	Gymnasium
The Modern side	...	,,	,, Realgymnasium
The Science side	...	,,	,, Realschule
The Higher Commercial side		,,	,, Handelsschule.

In No. 2, a school of 400 boys, you will note that there are two "sides," the classical and the modern and scientific, and that the final possibilities are added for the guidance of parents.

[1] From an address to the London County Council Conference of Teachers on January 6th, 1910.

In No. 1 there were so many boys that a form on any one of the sides was complete in itself; in No. 2 within one and the same form there are boys on either of the two sides. How this latter arrangement is effected will be explained afterwards.

The first great problem in connection with the organisation of a secondary school is that of defining its aim. "A good general education" is a vague and comparatively meaningless phrase. To quote the opinion expressed by a special sub-committee of the L.C.C., "We are of opinion that general education should not always be of one type. We see no reason why it should not be possible to give a good general education by means of different combinations of subjects. In one combination the 'tone' may be given by ancient languages, in another combination by modern languages, in another by science; but there is no reason why each combination, whatever the predominant note may be, should not form 'a good general education.'" It is good to know what we would be at. A marksman needs something to aim at, if it is only a haystack!

The curriculum should be the logical outcome of local needs. For example, it is worse than useless to insist on a classical side in a small country grammar school, where the leaving age is between fifteen and sixteen.

It is precisely in differentiation and classification of schools that our educational system is weakest. Abroad, the whole scheme of education is perfectly familiar to every parent. The familiarity of the educational system to parents abroad is due in the main to two causes:

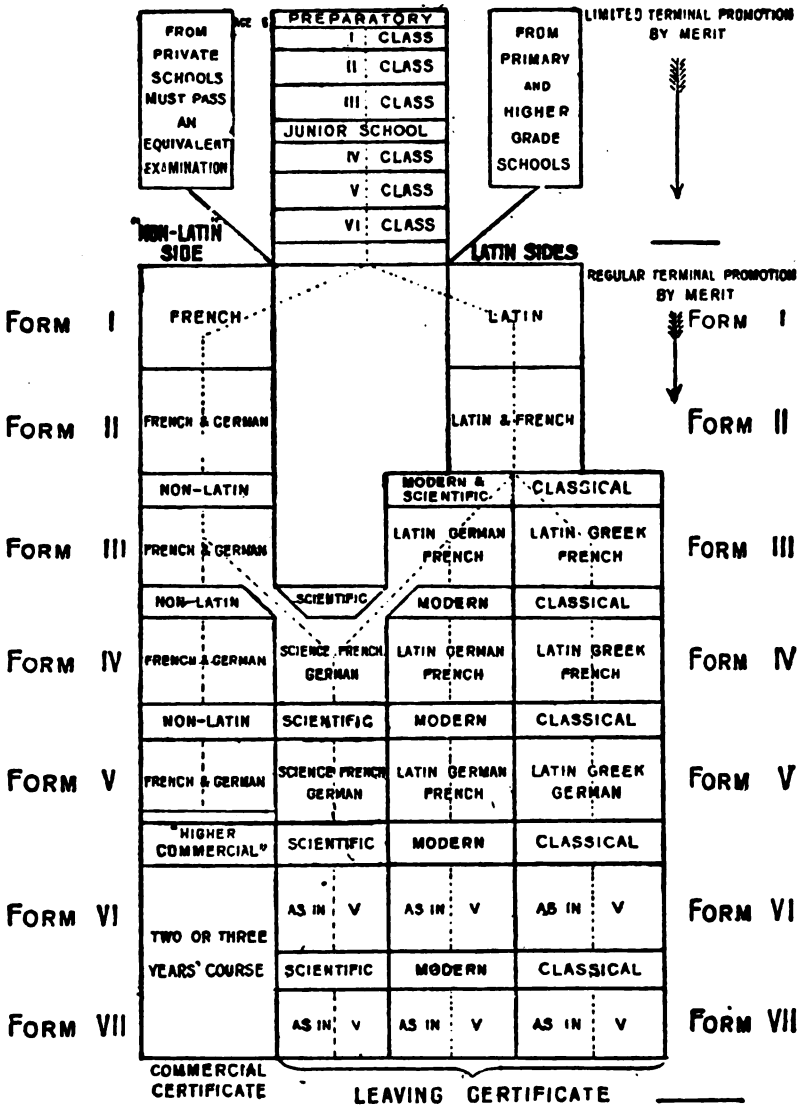
(i) The local control of each school:

(ii) The necessity for the exercise of choice at various stages of the pupil's progress.

Failure or incapacity at any stage is registered automatically. By a process of natural selection pupils are differentiated according to ability; the right calling or profession is chosen; the chances of misdirection are minimised; unsuitable aspirants are painlessly eliminated at an early age, so that the avenues are not blocked by incompetents. Our old friend "the ladder" is supplemented by the sieve.

We will assume that our school is a school for 400 boys, with sides as in the second diagram. Our boys enter between the ages of twelve and fourteen, and are supposed to have done French for one or two years. If the boy come from a private preparatory school, the entrance examination will probably reveal the fact that his development is sadly lopsided. Here again the fault is due to the fact that the curricula of the preparatory schools are dominated by the demands of the public schools; the prema-

No. 1. A SCHOOL OF 1,000 BOYS.
N.B. ONLY CHARACTERISTIC SUBJECTS ARE SHOWN



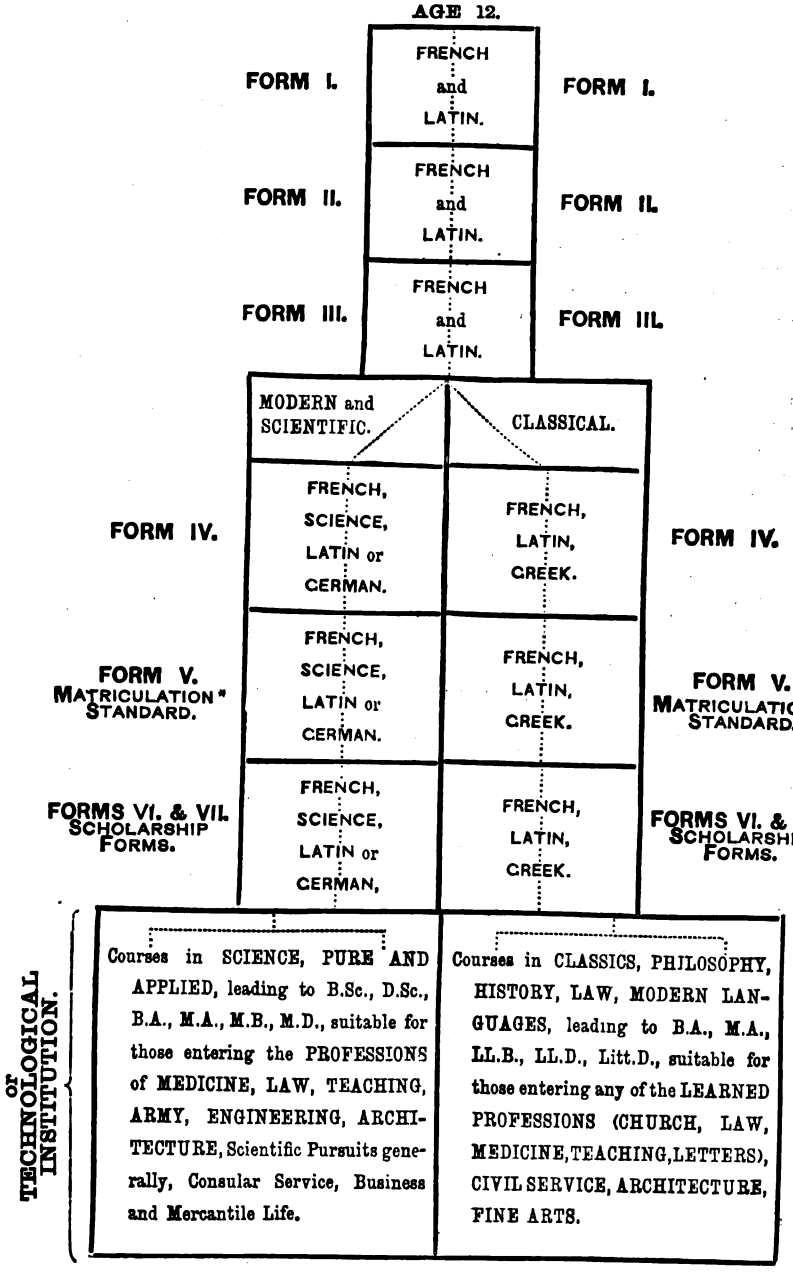
ture specialisation in classics or mathematics, and the acquisition of knowledge rather than the development of aptitude, are due to compliance with the demands of the public schools, the whole blame in both cases resting ultimately with the older universities. In dealing with such "lopsidedness" two courses are possible. The first course assumes the initial lopsidedness as normal; it provides only a partial remedy, but, if adopted, it will dominate the whole organisation of the school. The boy has been assigned to a certain form on the average of his attainments in what are called form-subjects, usually Latin, English, and French. But by adopting a reclassification of the school for purposes of teaching mathematics or modern languages, or both, it is possible to perpetuate the initial lopsidedness throughout the whole of a boy's school career. The precise value of this arrangement I have never been able to discover. Incidentally, it may be mentioned that it destroys the possibility of "intensive" time-tables, because the school must be divided into "blocks" (three or four in number) for the purpose of teaching these particular subjects, and in these blocks the times and hours must be the same.

The second plan is to arrange a special time-table for the lopsided boy, until such time as the anomalies shall have disappeared, and subsequently to ininsist on a certain degree of proficiency in all the subjects of his curriculum as a condition of promotion. By this means the all-round development of the boy is assured, whilst the intensive time-tables in the higher forms provide for specialisation, when the solid foundations have been laid. No boy should be allowed to specialise, until he has passed some such all-round examination as the matriculation examination of London University. The extent to which personal bias may unconsciously influence subject-experts, may be shown by the fact that, after a week's inspection of school No. 2, every one of the eight Board of Education inspectors recom-

No. 2. A SCHOOL OF 400 BOYS.

DIAGRAM
showing the Intermediate and Final Possibilities.

N.B.—Only Characteristic Subjects are shown.



* All Boys proceeding to graduate at a University should pass the Matriculation Examination before leaving School.

mended that the school should be reclassified for the purpose of teaching the individual subjects in which he was particularly interested. Yet within a year, the whole of the fifth form, both sections, classical, modern and scientific, passed the matriculation examination (or its equivalent) well and easily!

The school is divided into forms of about twenty-five boys in each. The functions of the form-master (new style) are confined to teaching his form in one subject at least, and to making up the marks and reports at half-term and at the end of term from the materials supplied by his colleagues. The form-master (new style) and his colleagues are specialists. Each master has his own room and remains there; he has his reference library and the "Realien" of his subject in his room. The forms change class-rooms at the end of each period. The change of rooms is beneficial in every way, particularly in respect of ventilation. The school has a great central hall, with twenty-four class-rooms opening out of it; the desks are separate desks, adjustable (back and front) for each boy. Monitors supervise the orderliness of the changes. In secondary education I am convinced that specialisation in subject-teaching is necessary. The advantages are great and real. The whole staff periodically resolves itself into subject-committees, which settle the schemes of work for the year in advance, choose the text-books, and discuss the methods of teaching. The form-master (old style) taught many subjects and was generally capable of teaching some of them. I will not apply to him Homer's description of Margites, who—

πόλλ' ἠπίστατο ἔργα, κακῶς δ' ἠπίστατο πάντα!

but, owing probably to the atmosphere of his form-room, too often it could be said of him when defunct that "he slept with his fathers after having slumbered with his contemporaries."

On behalf of the form-master (old style) it was claimed that by taking his pupils in a variety of subjects he learned to know them better. This is undoubtedly true, but the additional knowledge was gained at the expense of efficiency, and, in a year at most, the boy passed from him. The element of knowledge of the individual boy and the study of his individual temperament are provided for by the house-system. The emergence of this system in the day-school during recent years is remarkable and demands a brief explanation. The school is composed of eight houses, each under the care of two house-masters (senior and junior). The house contains, therefore, about fifty boys. Each boy, on entering the school, is assigned by the headmaster, after consultation with the parents, to a particular house, in which he remains throughout his school life. The house-master is then placed in direct communication with the parents, who henceforward deal with the house-master upon any ordinary matters affecting the welfare of the boy. It is to the house-master that the form-master sends the reports for signature, and for the transcription of their contents into the house record-book. The house-master is informed of any correspondence that passes between the headmaster and the parents of any boy in the house. Thus the house-master's position is one of very real responsibility. The gain to the school and to the headmaster is incalculable. The boy is known as otherwise he could not be. But a word of caution here may be advisable. In order that the house-system may work smoothly, it is essential that the respective functions of the various parts of the school machine should be clearly defined and understood. Unless the arrangements and organisation of a school are methodical and businesslike, no real devolution of authority and responsibility is possible. Want of method necessitates constant reference to the headmaster for the settlement of comparatively unimportant questions. Resourcefulness in devising temporary expedients is, doubtless, a valuable quality, but it cannot effectually or permanently compensate for the want of organisation. To substitute a personality, however vigorous, for a system is to achieve a minimum of result with a maximum of effort. We have all of us, I think, known headmasters whose motto seems to have been: "Caesari omnia uno tempore sunt agenda!" Moreover, such headmasters are apt to exercise the blighting effect of the Upas tree: nothing can grow under them; their colleagues are reduced to the condition of serfs and helots.

You will notice in Diagram 1 that the scheme includes the curriculum of a preparatory school; and that the whole school course covers the years from six to nineteen. The same arrangement is made in school No. 2, but the preparatory school is not indicated in the diagram. In the preparatory school great stress is laid on a thorough grounding in English and arithmetic; French, mainly oral, is taken for the last two years.

On the advantage of having one coherent scheme it is unnecessary to dilate. In the second diagram you will notice that in the first three forms there is a common course for all boys. In the middle and upper forms there is a division into two sides, the classical and the modern and scientific. The classical boys take Greek; the modern give the time to extra science and drawing, and also are able, if they wish, to substitute German for Latin. The classical and modern sides are not completely separated as they were in No. 1, but take much of the work in common, viz., English, French, some mathematical work, and, up to the fifth form, Latin.

The schemes of work are prepared each year in the summer term and provide for two promotions yearly without gaps. How this is done may be seen by reference to the syllabus. After a long experience of other systems this seems to be by far the best solution. If a year be taken as the unit, the form is apt to settle down comfortably and go to sleep; if a term be taken, the *crambe repetita* is apt to be deadly to the teacher. An anthropometrical record of every boy is kept from the time of his admission. The eyesight and hearing are tested; spinal curvature and similar

defects are noted, and remedial treatment adopted. The exercises are according to the Swedish system, and are intended to secure all-round development and health, rather than to give a training in tricks.

By extra-scholastic agencies are intended those clubs and societies, beyond class-rooms and class-hours, the primary object of which is to provide for the physical and mental recreation of present and former pupils. Their general value to the school can hardly be overestimated: they furnish opportunities for masters and boys to meet within and without the school in friendly intercourse on a common footing; they do much to establish the continuity of the school, and to conserve its best traditions. The cadet-corps (officers' training corps, new style), the football and cricket clubs, and the working boys' club, in particular, instil the notion of obligation into boys' minds at the most impressionable age. Such societies, well organised and conducted, militate powerfully against carelessness and selfishness, and more than any other factor engender and develop *esprit de corps*. The corporate life of the school should be strong enough to mould the character of each individual boy. The main social unit is the house, to which reference has already been made. More importance is attached to the house-matches than to having a large number of matches against outsiders, the object being to foster a pure love of the game rather than a spirit of rivalry with other schools. The importance of the house as the unit is accentuated by the award of the house-challenge cups and shields in games, and by the arrangement of the dining-hall, where boys sit at house-tables, on which are placed the cups, and opposite to which are hung the shields, that are for the time being held by the various houses.

A position of great importance in the school is held by the school monitors, the chief of whom is the school captain. They are appointed by the headmaster, who himself nominates half the number, the other half being nominated by the existing monitors. Before the appointments are made, the nominations are submitted to the staff for veto or approval, thus ensuring that those appointed have the full support of all concerned. When appointed they are arranged in order of seniority, those nominated by the headmaster taking precedence over those nominated by the monitors.

Elements of Physics. By Henry Crew. Revised by F. T. Jones. 435 pp. (New York: The Macmillan Company.) 6s.—This is the revised edition of a volume published originally in 1899. The reviser states that the aim of the book is to assist the teacher by providing an outline of the fundamentals of physics which shall be easily within the comprehension of the average pupil sixteen years of age. The illustrations are good, more especially those referring to practical applications of fundamental principles, and the frequent references to the historical development of the subject adds much to the attractiveness of the volume. Instructions for conducting experiments are omitted.

TYPICAL EXAMPLES IN GRAPHICAL CONSTRUCTIONS.[1]

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II.

VECTORS.

IF a straight line be drawn, it must be of some definite length, it must lie in some definite direction, and it must have a beginning and an end. Often the word *magnitude* is used instead of length, while the word *sense* indicates the motion from the beginning to the end of the finite line. The straight line regarded as having magnitude, direction, and sense is called a *vector*. The sense is indicated by an arrow head on the line. Sometimes it is necessary to consider the line as occupying a definite position in space; it is then called a *localised vector*.

All parallel straight lines of the same length and sense are said to be equal vectors. Clerk Maxwell, in "Matter and Motion," used a bar over the letters at the beginning and end of a line to indicate the vector; thus in Fig. 5:

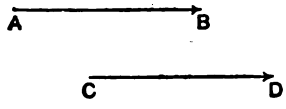


FIG. 5.

$\overline{AB}$ and $\overline{CD}$ are vectors, and since they are parallel and have the same length and sense

$$\overline{AB} = \overline{CD}.$$

Lines considered as directed quantities must obviously be treated differently from lines regarded as having length only. If two lines be drawn pointing towards the N. and E., and of lengths 3 and 2 inches respectively, then, as regards length only, their sum is defined as *the length obtained by placing them end to end in a straight line, i.e.*, 5 inches is the sum of their lengths. But what is their sum taking into account their directions and sense? This is again a matter of definition. The result of going 3 inches N. and then 2 inches E., or 2 inches E. and then 3 inches N., is, as regards direction, sense, and distance from the starting-point, the same as going $\sqrt{13}$ inches in a certain direction between N. and E., which on drawing the lines will be found to be 56° 18·5′ N. of E. The line of length $\sqrt{13}$ inches drawn in this direction and sense is called the *sum* or *resultant* of the two given directed lines or vectors.

To add two vectors: *Place the beginning of the second to the end of the first; then the vector from the beginning of the first to the end of the second is the sum of the two vectors.*

In Fig. 6, $\overline{PR}$ is the sum of $\overline{PQ}$ and $\overline{QR}$

$$\left.\begin{aligned} &\text{and } \overline{PR} = \overline{PQ} + \overline{QR} \\ &\text{and } \overline{PR} = \overline{R_1Q} = \overline{R_1P} + \overline{PQ} \end{aligned}\right\} \quad (1).$$

[1] The first article was published in January, 1910 (vol. xii., p. 12).

For more than two vectors, we have further to *place the beginning of the third to the end of the second, and so on, until finally, the vector from the beginning of the first to the end of the last is the sum.*

In Fig. 9, $\overline{ab}$ is the sum of $\overline{aa_1}$, $\overline{a_1a_2}$, . . . $\overline{a_4b}$, and $\overline{ab} = \overline{aa_1} + \overline{a_1a_2} + \overline{a_2a_3} + \overline{a_3a_4} + \overline{a_4b}$.

[It is an easy deduction from (i) to show that the sum is independent of the order of addition.]

The vectors when placed as above form an open or closed polygon called the *vector polygon.* When the vector polygon is closed, *i.e.*, when the beginning of the first vector coincides with the end of the last, the sum is zero.

If there are only two vectors whose sum is zero, then if $\overline{AB}$ is one, the other is $\overline{BA}$, so that

$$\overline{AB} + \overline{BA} = 0$$
$$\therefore \overline{AB} = -\overline{BA},$$

and therefore, if the sense of a vector be reversed, its sign must be changed.

By the aid of vectors, it is possible to discuss many problems in velocities, centres of gravity, forces, &c., and to solve them graphically with ease. A few examples will, it is hoped, make this a matter about which there can be no doubt.

FORCES.

A vector seems the natural way of geometrically representing a quantity which is directed in space. Thus, if the tractive force of an engine on a train is of magnitude 10 tons weight, it could be represented by a line drawn parallel to the rails of length 10 cms., an arrow-head on the line showing in which sense the engine was pulling the train. This vector represents the force completely, except in regard to position, and is called the vector of the force.

It is better, in the first instance, to give statics an experimental basis, rather than to regard it as a series of deductions from Newton's Laws of Motion. A few simple experiments can easily be devised to establish the following:

(1) If a body is in equilibrium under the action of a number of concurrent forces in a plane, the sum of the vectors of the forces is zero.

(2) Conversely, if the sum of the vectors is zero, and the forces are in a plane and concurrent, the body is in equilibrium.

Two problems, illustrating these results and simple deductions from them, will be now given.

A load of 5 cwts. is suspended from a crane by a chain of length 20 ft.; a doorway is opposite the load and 8 ft. distant; with what force must two men pull horizontally on the load so as to keep it suspended just within the doorway? In what direction should the load be pulled so as to keep it in position with the least possible force?

The line SL (Fig. 6) representing the length of the chain should be drawn to scale (SL = 5″), and the doorway line AB drawn in its proper position. With S as centre, describe arc of radius SL, cutting the doorway line in L_1. Then the *direction* of the force which the chain exerts on the load at L_1 is SL_1; the two other forces keeping the load in equilibrium at L_1 are the weight of the load and the horizontal pull of the men.

Draw a line PQ parallel to SL of length 10 cm. (or in the absence of a cm. scale, 5 inches); from the lower end Q draw QR parallel to SL_1, and from the other end P draw PR perpendicular to PQ. Then since $\overline{PQ}$ is the vector of the weight, and

$$\overline{PQ} + \overline{QR} + \overline{RP} = 0,$$

$\overline{QR}$ is the vector of the pull of the chain on the load, and RP is the vector of the men's pull. On measuring the lengths of QR and RP on the 2 cm. scale, the chain pull and the force exerted by the men can be found in cwts.

The vector polygon (a triangle in this case) could have been drawn by making PR_1 parallel to SL_1, and QR_1 perpendicular to PQ_1, but the values of the forces thus found are exactly the same as before. If the pull exerted by the men were not horizontal but upwards and inclined to

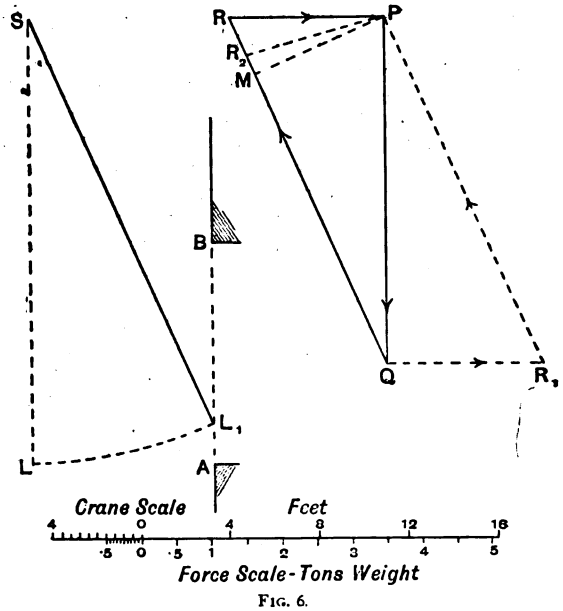


FIG. 6.

the horizontal at 15°, then PR would have to be drawn in position PR_2, making 75° with PQ. Evidently for this direction the pull of the men would be less than before, the vector polygon being now PQR_2; by changing the direction of their pull the men can exert all sorts of forces, but the smallest one will be that which has a direction perpendicular to SL_1. Measure the perpendicular PM on the 2 cm. scale; it gives the minimum force.

Suppose now the distance of S from the doorway line increases, but the length of the chain remains the same. It is evident that the angle PQR increases, and therefore the necessary pull that the men have to exert gets larger. If the men can exert a maximum force of 3 cwts., what is the greatest distance that S may be from the doorway line if they pull horizontally? How much further out may S be if the men pull in the direction that gives minimum force? The last problem

can be solved by noticing that the minimum pull is always perpendicular to the chain, and that the angle in a semicircle is always a right angle; hence, if a semicircle be described on PQ, and PR (of length 6 cms.) be set off in this form P, then QR gives the direction of the chain. S can be found by drawing L_1S parallel to RQ and of length 5 inches.

THE SIMPLE WALL CRANE.—*Two bars, AC = 15 ft. and BC = 10 ft., are pin-jointed together at C, and to a vertical wall at A and B. A load of 4·02 tons is suspended from C, and it is required to find the forces (stresses) in the bars AC and BC due to the load.*

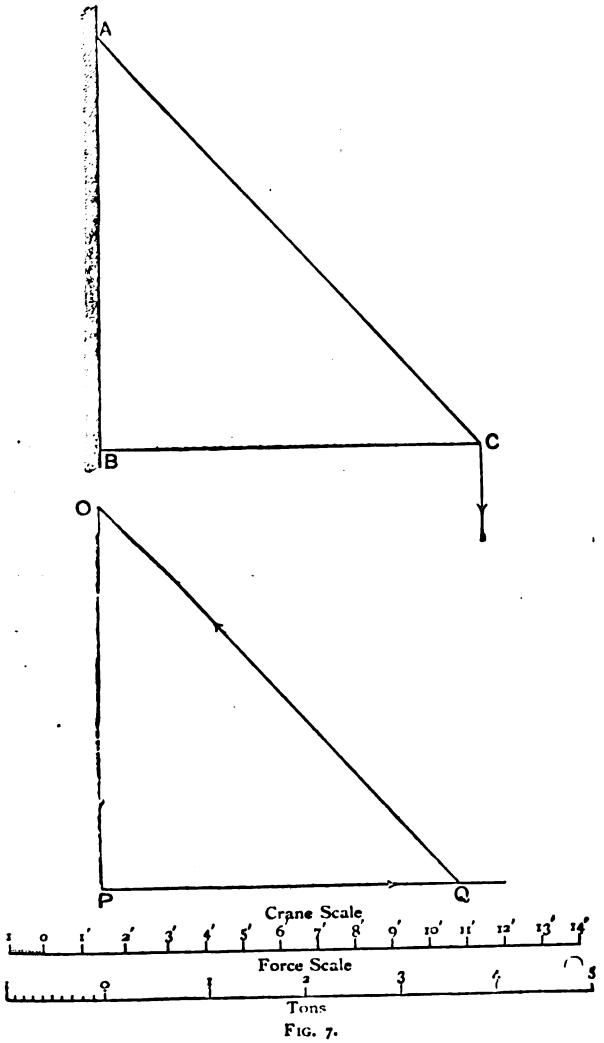


FIG. 7.

If the weights of the bars are small compared with the load, we may as a near approximation consider each bar as under the action of two forces only, viz., the forces which the pins at their ends exert on them. For instance, in the case of the bar AC, it is in equilibrium under two forces acting at A and C on the bar, and therefore these forces must be equal in magnitude, and opposite in sense, and act along the line AC. At the pin C act three forces, the load 4·02 tons downward, and the forces which the bars exert on the pin in the *directions* AC and BC. For the equilibrium of C we draw the vector polygon as follows:

OP parallel to AB and of length 8·04 cm. (2 cm. to 1 ton), PQ parallel to BC and OQ parallel to AC, intersecting in Q. The vectors of the forces are then $\overline{OP}$, $\overline{PQ}$, and $\overline{QO}$. Measure PQ and QO on the 2 cm. scale, and obtain the forces which the bars exert on the pin.

Since AC exerts on C a force given by $\overline{QO}$ from C towards A, this must be due to the action of the pin at A on AC, and the bar transmits this force to C; but the bar is in equilibrium, and therefore the pin at C must exert a force on AC given by $\overline{OQ}$. The actions of the pins at A and C on the bar therefore tend to elongate the bar, and it is said to be in tension, or in a state of tensile stress. The pair of forces $\overline{OQ}$ and $\overline{QO}$ constitute a tensile stress. Suppose the bar AC is cut through at any point D; then to maintain DC in position we must apply at the cut surface D (of DC) a force $\overline{QO}$, and to keep AD in position we must apply at D (of AD) a force $\overline{OQ}$; hence at any point D of the bar there must act (before cutting takes place) these two forces $\overline{OQ}$ and $\overline{QO}$, or a stress must be considered as acting at every point of the bar. A similar argument shows that BC is in a state of compressive stress. OPQ is often called the stress diagram.

CENTROID (CENTRE OF GRAVITY).

The point which occupies a mean position amongst a number of points, or the mean position in an area or volume, is called the centroid.

Suppose there are three points, A, B, and C, whose positions are given by their vectors $\overline{OA}$, $\overline{OB}$, $\overline{OC}$ (Fig. 8), from a known point O (the origin).

Draw the vector polygon for these three vectors and find their sum; in the figure the vectors are denoted by α, β, and γ, and their sum by σ. Set off from O the vector $\overline{OM}$ where

$$\overline{OM} = \tfrac{1}{3}(\overline{OA} + \overline{OB} + \overline{OC}),$$

then M is the centroid.

This point M is on any median one-third up from the base towards the vertex. Proof: Suppose M is the centroid; then, if so, the sum of the vectors from M to A, B, and C should be zero, *i.e.*,

$$\overline{MA} + \overline{MB} + \overline{MC} = 0.$$

In a figure mark M_1, the mid-point of BC, then

$$\overline{MB} = \overline{MM_1} + \overline{M_1B}$$
$$\overline{MC} = \overline{MM_1} + \overline{M_1C};$$
$$\therefore \overline{MB} + \overline{MC} = 2\overline{MM_1} + \overline{M_1B} + \overline{M_1C},$$
$$\text{But } \overline{M_1B} + \overline{M_1C} = 0$$

since they are opposite in sense;

$$\therefore \overline{MA} + \overline{MB} + \overline{MC} = 2\overline{MM_1} + \overline{MA} = 0$$

Since these two vectors, $2MM_1$ and $\overline{MA}$, have their sum zero, and are drawn from a common point M, they must be in the same straight line, *i.e.*, AMM_1 is the median, and twice the length of MM_1 must be equal to the length of AM. Gener-

ally *if there are n points, A, B, C, . . . given by the vectors OA, OB . . . then the centroid M is given by the equation:*

$$\overline{OM} = \frac{\overline{OA} + \overline{OB} + \overline{OC} + \ldots}{n}$$

and M is such a point that

$$\overline{MA} + \overline{MB} + \overline{MC} + \ldots = 0$$

[It is quite easy to prove that for any given points there is only one centroid.]

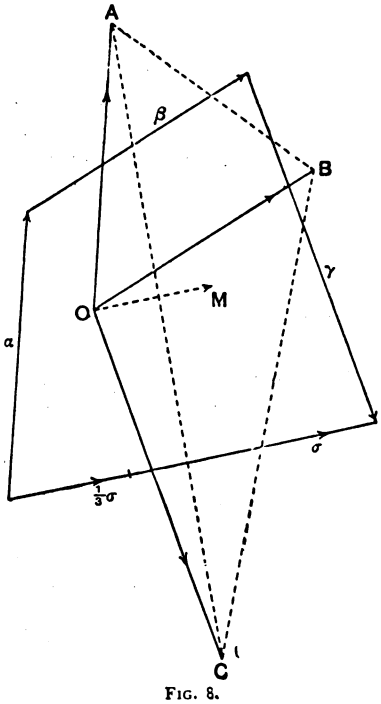


FIG. 8.

CENTROID OF ANY CIRCULAR ARC, ACB.—Suppose five equal straight lines, AA_1, A_1A_2, . . . A_4B, be placed in the arc (Fig. 9). The centroid of each line is evidently at its mid-point, and there are five of these, M_1, M_2, . . . M_5. The centroid of the five lines is clearly the centroid of the five points, M_1, M_2, . . . M_5. [A formal proof is an easy exercise in vectors.]

Let O be the centre of the arc, and the vectors giving the mid-points OM_1, OM_2, . . . OM_5. The vector polygon of these vectors is a, a_1, a_2, . . . b. (To save space this polygon is shown reduced in size from inches to cms.)

The sum of the vectors is $\overline{ab}$.

Since OM_1 is perpendicular to AA_1, then a_1a_2 . . . b has its sides perpendicular to A, A_1 . . . B, and hence the two polygons are similar, and ab is perpendicular to AB. The centroid M is then given by

$$\overline{OM} = \tfrac{1}{5}\overline{ab}.$$

But

$$\frac{ab}{AB} = \frac{aa_1}{AA_1} = \frac{OM_1}{AA_1} \ldots \text{as lengths;}$$

$$\therefore \tfrac{1}{5}ab = AB \times \frac{OM_1}{5AA_1};$$

$$\therefore OM = \frac{\text{closing chord}}{\text{perimeter}} \times OM_1.$$

This formula remains true, however many equal lines are inscribed in the arc; when the number is increased without limit, the perimeter becomes the arc and OM_1 becomes the radius.

For a circular arc, then, the centroid is given by the formula

$$OM = \frac{\text{closing chord}}{\text{perimeter}} \times \text{radius}.$$

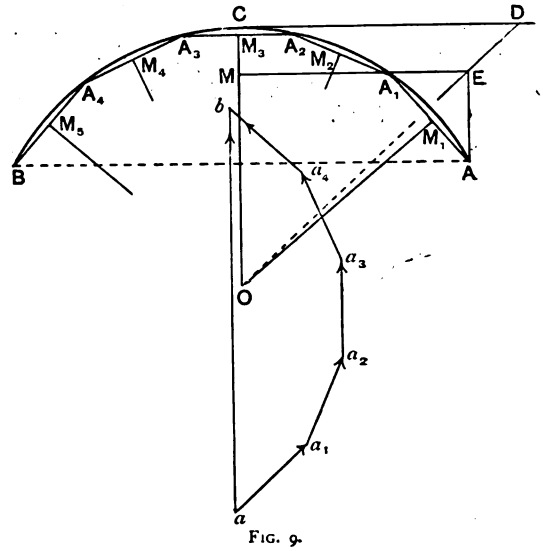


FIG. 9.

The following simple construction will determine the centroid M.

Draw the tangent at C, the mid-point of the arc AB, step off along this CD = the semi-arc CA, draw AE parallel to OC, cutting OD at E, and finally mark M on OC where EM parallel to AB cuts it.

SCIENTIFIC APPARATUS DESIGNED BY TEACHERS.

THE usual exhibition of books and apparatus was held in connection with the annual meeting of the Association of Public School Science Masters reported last month; the number of firms exhibiting was larger than it has ever been, and the large hall at Westminster School was quite filled; on the other hand, we noticed that the tables devoted to the apparatus designed by the members of the association contained fewer exhibits than has been the case in past years. Since this exhibition affords the only means by which a useful device introduced into one school can become known in others, we much hope that no feeling of false modesty will prevent the members from making this portion of the exhibition the success it should be. Amongst the more interesting of the exhibits we noticed the following.

A CARBON DIOXIDE APPARATUS, by Mr. Francis Jones (Manchester). This new and very light piece of apparatus is illustrated in Fig. 1; the weighed carbonate is placed with a little water in the tube A and hydrochloric acid in the bulb-tube B; by closing the point of this tube with the finger

whilst the acid is being poured into the bulb, and then adjusting the stopper so that the hole passing through it is not opposite to the corresponding hole drilled in the neck of the bulb, the acid is prevented from flowing. The drying agent is placed in the tube C, and since this is provided with a stopper containing a hole drilled in the same manner as that closing B, it is possible to keep the contents out of contact with the air during the process of weighing. In order to use the apparatus the hole in C is placed opposite the exit tube, and the two holes in B made to coincide, the air is thus admitted, and the acid begins to flow; upon turning the stopper the flow is stopped, and by repeating the process the carbonate may be dissolved without any spitting; finally a current of air is drawn through the apparatus by means of an india-rubber tube attached to C.

AN IMPROVED FORM OF WOULFFE'S BOTTLE was shown by Mr. C. E. Livesey (Stonyhurst). The disadvantages of the usual type of this apparatus

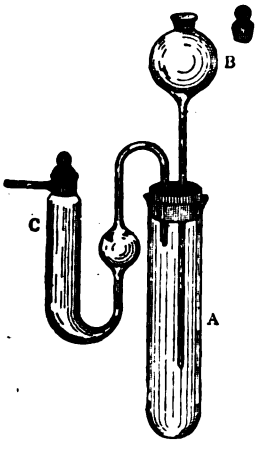


FIG. 1.

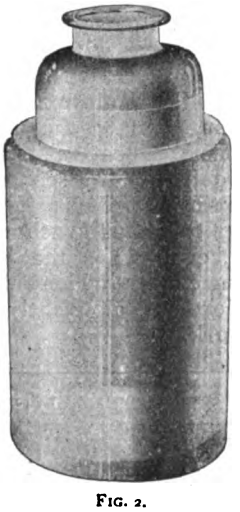


FIG. 2.

are so considerable that it has disappeared from many laboratories; in Mr. Livesey's pattern the bottle is made in two parts, the upper portion being ground to fit air-tight on to the lower, which is also ground. The width of the neck of the lower portion allows the introduction of much larger lumps of material, and a consequently slower evolution of gas, whilst the difficulty of cleaning the bottle, one of the chief drawbacks to the old form, is entirely removed. If the joint is properly vaselined it will withstand a considerable pressure and the gas can be easily driven out against fifteen inches of water. Two forms of this bottle were exhibited; in that shown in Fig. 2 there is one hole in the upper portion, and this is closed by a two-holed rubber bung; the other form was provided with two necks, but seemed to us to offer no advantages over the simpler and therefore cheaper pattern. We understand that the bottle will be shortly placed upon the market by Messrs. Philip Harris and Co., of Birmingham.

MODELS FOR ILLUSTRATING VALENCY were also shown by Mr. Livesey. These consisted of wooden discs about two inches in diameter. Two discs were attached to a thin stem which kept them a short distance apart; the upper disc was covered with a blackboard preparation, and a pin projected from the lower; these discs represented atoms, the symbol being chalked upon the blackboard surface. The "bonds" were represented by short lengths of wood, and a light spring was attached to each, so that when inserted in the space between the discs they were held in position; since any number of "bonds" could be fixed to the "atoms," and could be arranged in any position, it is possible by means of them to illustrate the difference between saturated and unsaturated compounds, the structure of peroxides, &c., &c. The models can be easily made in the school workshop and will probably soon be found in most laboratories.

TWO FORMS OF APPARATUS FOR OBTAINING A STEADY FLAME FOR SPECTROSCOPIC AND INTERFERENCE WORK were shown, one by the Rev. B. J. Whiteside, S.J., the other by the Rev. S. Sircom, S.J. In the former a test-tube was connected to a Bunsen by a short piece of glass tubing, some well-dried powdered borax was placed in the test-tube, and the coal-gas admitted over this by means of a glass tube drawn out to a point; the salt was thus disturbed and carried forward with the gas to the Bunsen. An inch depth of salt gives a bright flame for several hours. In Father Sircom's apparatus an ordinary incandescent gas burner was mounted on a piece of wood; the pillar for the mantle being replaced by a short iron rod supporting an iron spoon; the salt was placed on this and the gas lighted. Both these forms are most simple, and are said to work well with but little attention.

By far the simplest device shown at the exhibition was one by Mr. G. H. Martin (Bradford) for drawing connecting tubing on a blackboard. It consisted of a rather large cork containing two holes cut through one of its sides; pieces of chalk are placed through each hole and the instrument is complete. In order to use it, it is only necessary to hold the cork in one hand and draw the chalk over the board; the two lines are, of course, parallel, and the resulting diagram far neater than those usually produced by schoolmasters in the laboratory.

A SIMPLE SLIT FOR USE WITH THE OPTICAL LANTERN was shown by Mr. Douglas Berridge (Malvern). It consisted of a circular brass disc containing the slit; the adjustment was effected in the usual manner by means of a fine screw working against a spring; the disc was mounted in a wooden block, and by the alteration of a single screw the plane of the slit could be changed from the horizontal to the vertical position.

A MECHANICAL LANTERN SLIDE by Mr. O. H. Latter (Charterhouse) consisted of a coloured slide of the British Isles placed in a wooden frame; separate slides of (*a*) a cyclone, (*b*) an anti-cyclone, upon which were marked isobars and the probable weather resulting from them, could be drawn

slowly over the fixed slide, the progress of a storm being thus easily projected upon the screen.

At the close of the meeting there was an auction sale of some very interesting historical apparatus sent to the exhibition by Mr. J. D. Cogan. Mr. Douglas Berridge (hon. sec.) acted as auctioneer and the bidding was keen, especially for a miner's fire wheel and a box of Prometheans (the latter believed to be the only one in existence); both these items were knocked down to Mr. B. Middleditch, and are, we understand, to be placed in the school museum at Harrow.

THE ARMY AS A PROFESSION.

By An Army Coach.

THE Army is evidently not popular as a career with the young man of the present day. In June last no competition was held for entrance to Sandhurst, as the number of applications was less than the number of vacancies. And in December matters were worse, as there was no competition either for Sandhurst or for Woolwich on the same grounds. In the course of last year there was a great outcry against the difficulty of the Qualifying examination. Certain fond parents actually went so far as to ask what use there was for an officer to know Latin or geometry. We trust that the authorities of the University of London may be relied upon to abate no jot or tittle of their standard, as this examination is now the only barrier between us and an uneducated Army such as we had in the pre-Cardwell days.

The reasons for the unpopularity of the Army as a profession are not difficult to discover. In olden times—that is, before the South African War—the idle or brainless rich were eager to enter a profession which gave them a certain position and in which there was little work to be done. The meagreness of the pay did not affect them. Consequently we find that in June, 1899, there were 179 candidates for 65 vacancies at Woolwich and 380 candidates for 84 vacancies at Sandhurst. But since the day of Mr. John Burns's "gilded popinjay" is over, and now that an officer's life means a good deal of hard, and often unpleasant, work at an altogether inadequate stipend, the rich have ceased to crowd into the ranks of the Army. The continued rise in the cost of existence, too, has prevented the middle classes from allowing their sons to enter a profession where the expenses exceed the receipts, and where the prospects are so poor. Why should they allow their sons to give twenty or twenty-five of the best years of their lives to a calling from which they may be retired at the age of forty-five with a miserable pension insufficient to live upon, and with few possibilities of starting in another profession? When Mr. Haldane was questioned by Mr. Lee in the House of Commons as to what he proposed to do at this juncture, he replied that he was in communication with the headmasters. But I venture to doubt whether even their influence will be sufficient to provide more candidates, unless the conditions of service are considerably ameliorated.

Yet one often wonders why it should be possible for the French and German officer to live comfortably on his pay where his British *confrère* cannot. It is said that the standard of living is higher in England; but this may be doubted. I have seen officers messing at a restaurant in a French provincial town in quite as comfortable a fashion as is customary in our own Army. The only difference was that the cooking was better and the wines superior. It may be all a question of management, the amateur mess president not being so good as the professional hotel keeper.

As for the poor Army coach, his occupation is gone: for the number of candidates preparing for the Qualifying outside the public schools is not sufficient to enable him to keep his establishment open. He is reduced to do one of two things. Either he concentrates on the purely military side of his work, and prepares only for the Staff College, the Militia Competitive, and the Promotion examinations; or he combines preparation for the Qualifying with that for other examinations of a like nature, such as the London Matriculation and the entrance examinations to other professions and to the universities. Of course, the official educationists and the public-school masters would like to see the "coach," or "crammer," extinguished entirely. But there will still be boys unfit for public-school life, or unable to profit by it, even when that reform of English education comes for which Messrs. Norwood and Hope plead so eloquently in their recently published work.

PRACTICAL DOMESTIC ECONOMY TEACHING IN A SECONDARY SCHOOL.[1]

By M. A. Cade,
London County Council Inspector of Domestic Economy Classes.

DURING the years 1907–9 this clause has appeared in the regulations for secondary schools issued by the Board of Education:

"Provision should be made, in the case of girls, for instruction of a practical character in the elements of housewifery. For girls over fifteen years of age an approved course in domestic subjects may be taken instead of science."

For the current year the clause is somewhat more insistent in tone—"should" is replaced by "must."

In the majority of secondary schools in London provision for instruction in practical housewifery is confined to a weekly lesson in needlework, varying in duration from forty to ninety minutes. In some schools a course of instruction in cookery may also be added during one year in the girl's school life, generally in one of the middle forms. The small amount of time allocated to domestic subjects in these schools is not due usually to any

[1] From an address to the London County Council Conference of Teachers, January, 1910.

want of sympathy on the part of the headmistresses, but rather to an already crowded time-table, and to the fact that a knowledge of these subjects is not required for the Oxford and Cambridge Local—or similar—examinations. The man in the street is prone to judge a school by the number of passes secured in these examinations; therefore there is a tendency to make the subjects that count for them of premier importance.

In still fewer schools is there any definite attempt to arrange a carefully co-ordinated course in domestic economy for girls over fifteen years of age in place of science. Something on these lines is being done in that school which has effected so many reforms in education—the North London Collegiate. Very valuable post-school courses are also arranged at the Clapham High School and the Northern Polytechnic.

It may be of some interest to you to hear of a course that is being worked out in one of the county secondary schools in London. The headmaster decided to take advantage of this permissive clause in the regulations for the girls in Form V. whose average age is about fifteen years six months. He dropped higher mathematics in this form, substituted practical domestic subjects, and so co-ordinated other school subjects with home management that the whole forms a coherent course of instruction, the subjects closely dovetailed and reacting upon each other. The course extends over three terms and is divided as follows:

	h.	m.	
Practical Cookery	2	0	weekly
,, Laundrywork ...	1	20	,,
,, Housewifery	2	0	fortnightly
,, Dressmaking ...	2	25	weekly
Hygiene	0	45	,,
Science	1	30	,,
Arithmetic	1	30	,,
Drawing	0	45	,,
Total	11	15	,,

The remainder of the time is devoted to English, French, history, geography, singing and drill, according to the Form V. syllabus in these subjects. In the cookery and laundrywork lessons the teacher and class generally work conjointly, thus economising time; the syllabuses cover all the principal processes in both subjects, and include some instruction in food values, diets, arrangement of meals, and the management of household washing.

The dressmaking lessons consist of instruction in drafting and adapting patterns, drawing the design for a simple costume, cutting out and drawing up a cotton, lined, or delaine dress, ornamented with simple embroidery, the design for which has been prepared in the drawing class. The width and qualities of various dress materials are discussed, the quantities required for a dress or blouse, and the cost, are carefully reckoned.

It should be noted that in the four previous years these girls have followed a carefully prepared course of plain needlework, which comprised the drafting, planning, cutting out and making up of various under-garments. Hygiene includes a certain amount of physiology—the structure of the body, circulation, respiration, and digestion—sources and uses of water, food, principles of ventilation and sanitation, care of the body, clothing, care of invalids, together with a short course on the care and management of infants and young children. A baby is washed and dressed, the importance of natural as opposed to artificial feeding is emphasised; some instruction is given on baby ailments, and training to form good habits.

The housewifery lessons are of a thoroughly practical nature, and consist of daily and weekly care of a flat inhabited by two teachers; therefore the conditions are quite normal. Methods of heating and lighting are discussed, the cost and quality of the equipment of this and a smaller flat are considered. The science syllabus covers some study of measurement, density, heat, temperature, solution, evaporation, distillation, crystallisation, fermentation, common acids and alkalis, atmospheric air, water, carbon, fats and oils, soap, sugar, starch, gluten, albumen, &c.

In passing, may I say that the average cookery syllabus, consisting of an aggregation of dishes arranged in more or less systematic order, does not lend itself well to correlation with science? The production of dishes should be regarded in a first course of cookery as incidental; the action of different kinds of heat upon different foodstuffs should be fundamental. I find that if the girls are taught first to subject such foodstuffs as do not require mixing with others, *e.g.*, meat, fish, vegetables, fruit, to dry heat in baking, grilling or roasting, to moist heat in steaming, boiling or stewing, to hot fat in frying, to soaking in cold water (as a foundation for soups), and to note carefully results; then to pass to certain foundation recipes, such as batters, pastes, and doughs, and again apply the various heats, they will have obtained a good working foundation knowledge of the elements of cooking upon which to formulate recipes, produce combinations of food and compile menus. The drawing syllabus includes instruction in colour and design, the drawing of plant forms from nature as a basis of design, drawing from the round—the dress-stand in various positions as an initial step to costume-drawing—and memory drawing. This section is closely correlated with dressmaking, and is found to be most helpful in pattern drafting, designing for simple trimmings for yokes, blouses, belts, &c., and in blending colours.

There are frequent consultations between the domestic economy teachers and the science and art masters, each endeavouring to supplement and make more vivid the teaching of the others. In connection with this home management course, the girls are taken to exhibitions which illustrate anything connected with the home. It has been shown that science, drawing, and arithmetic can be brought to bear upon home problems with great advantage. I have reason to believe that some co-ordination will be made with other

school subjects, notably history and geography. How much could be taught of the progress of civilisation in tracing the history of the development of the materials used for clothing or furnishing; the evolution of weaving the Bayeux tapestry; the sumptuary laws; the influence of the guilds in the Middle Ages; the settlement of the Flemish and Huguenot weavers in this country, evidences of which the girls may see for themselves at the present day in the wide weaving windows of Bethnal Green and Spitalfields; the flourishing crêpe and silk factories at Braintree, the very houses where the Flemings settled in Canterbury now being used for their original purpose by the Canterbury weavers; the introduction of the spinning machine, and the consequent riots; the cotton famine in Lancashire as a result of the American Civil War; the protection of workers through the Factory Acts—these and many other incidents all bound up in the materials the girls are handling.

Through the foodstuffs they can learn something of the countries which supply us; the conditions under which the food is provided; why flour is "up" or "down"; the difference it makes to Greece when there is a good currant crop; the advantages of cold storage. Even in ordering coals the girls can be reminded of the Roman occupation of Britain. No one can say that those who really know about the materials used in the home are ill-informed, and, incidentally, they appreciate the better the conditions relating to the interdependence of nations.

Now as to the attitude of the various teachers concerned in this scheme. The headmaster frankly believes in the training, and states that, if accommodation were available, he would like all the girls in the school to go through a similar course. By his courtesy I have received from each girl an essay on the training from her individual point of view. I find that all the girls seem glad to have had the opportunity to receive this instruction; they recognise its immediate and, more especially, its future usefulness. Cookery is easily the most favoured subject, followed closely by dressmaking; while laundrywork and housewifery do not seem at all popular, although the girls appreciate the necessity for learning something of these branches of domestic work. They all seem keenly interested in hygiene, and realise that a knowledge of this subject helps materially in home management. The correlation of science and arithmetic to domestic economy is quite apparent to them, and they evidently thoroughly enjoy the practical application of their drawing to their dressmaking. The girls are impressed with the necessity for order, cleanliness, and economy in all operations. All this is excellent.

Now I come to the views of the domestic economy teachers. They are delighted to give, with the stimulating co-operation of the members of the secondary school staff, this carefully planned systematic instruction. They state that the girls are keen, intelligent, bring their reason to bear upon the business of the home, soon begin to take initiative, and to accept responsibility. They are ideal pupils for a course of home management, except in one respect. It was found early in the course that the girls were slow, lacked dexterity, were easily tired, and certain operations seemed burdensome and distasteful to them—you will remember that laundrywork and housewifery were not popular. Some time passed before they performed simple household duties quickly and briskly. In a word, they were manually unprepared. In saying this I do not reflect at all upon the school in question. I know of no secondary school where so much is being done, and so well done, in the direction of instruction in domestic economy.

These observations show that the work is unnecessarily and unnaturally difficult for the girls, and that active and constructive work has been lacking in their earlier training. From the economic point of view, this lack of manual training in the lower forms of secondary schools is surely unwise. It must be borne in mind that the teaching of domestic economy is necessarily expensive. The equipment and teaching staff are somewhat costly, the latter not on account of high salaries, but because of limited classes. Experience has proved that for practical subjects no class should exceed eighteen in number. It therefore follows, if the girls are unprepared, the specialist teacher is not used to the best advantage. There is another point to remember. The majority of the girls attending the secondary school must prepare to earn their livelihood. The teaching profession will not absorb all; generally speaking, clerical work and typewriting do not offer, unless for the exceptional woman, a wide field of employment. Incidentally, these are unproductive occupations. There remain, among other trades, dispensing, bookbinding, the various needle trades, photography, jewellery, flowermaking, all of which demand a high degree of manipulative skill. The general manual training in preparation for the specialised training should be given throughout the school life, beginning in the kindergarten, and extending through the elementary and secondary schools, forming a gradual but very sure foundation for the business of life and livelihood.

It would be entirely superfluous for me to put forth any arguments in favour of the educational value of hand-work. I must, however, take the opportunity to plead that, for girls at least, the "associative activities" may be based upon the home and human needs. Up to the age of seven or eight years normal children will learn through their play, first in primitive fashion, then more complex as their conceptions of home widen. Little bits of real work can be quite naturally grafted on to the play, and will afford intense delight to the small people. Then comes that period of wonderful activity and energy in child life, from the ages of eight to thirteen years; this is the time to teach home craft—not home management. So long as the craft of the home is taught in the earlier years, the management

of the home can well be postponed till late in the girls' school life. It might even form a post-school course

The play of the children should merge more and more into work, and if rightly guided, the work will be done, not as a drudgery, but with the keenest enjoyment. Those domestic duties which the girls of fifteen to sixteen years found—as one expressed it—horrid, these younger girls will regard with pride and delight. It is surely false economy to defer teaching girls those duties which will enable them to become manually expert in the management of a home, until such a period as they have outgrown the desire to perform them. Domestic subjects must also be made intellectually interesting—the work must be made worth doing—for our girls are not going to be household drudges. They will then bring their reason and ability to bear upon the management of the home, working systematically and easily because they are trained, using with intelligence labour-saving appliances, and enjoying rationally the leisure which should result from carefully planned work.

PERSONAL PARAGRAPHS.

THE Master of Wellington College has been appointed Bishop of Norwich. To me, at any rate, it does not seem seventeen years since the Rev. Bertram Pollock was appointed to Wellington College. He was then only thirty years of age, and consequently takes up the work of the see of Norwich very young, and also with comparatively little experience of Church affairs. However, the man in whom is the real *vivida vis* will very probably govern a diocese with the same success as he governs a big school. Dr. Pollock was one of Haig Brown's pupils at Charterhouse, and a scholar of Trinity, Cambridge. He took a first class in the Classical Tripos in 1885, and got a "blue" for the quarter-mile in 1886. In this year he was appointed by Canon G. C. Bell as an assistant-master at Marlborough. "It may be presumed," says the *Times*, "that the King's interest both in Norfolk and in Dr. Pollock has been a considerable factor" in his selection for the vacant see.

* * *

MR. J. E. KING, who has now begun work at Clifton, had an interesting aftermath of Bedford Grammar School in the recent case which was heard at the Bedfordshire Assizes. He and the school authorities were sued by a lady for damages for expelling her boy. The boy had prevaricated and lied, and was ordered by the headmaster to be caned, but he refused and went home. The headmaster then refused to take him back into the school until he had submitted to the punishment. The Lord Chief Justice found that the plaintiff had taken an exaggerated view of her rights, and found for the defendants, with costs.

* * *

IT was in March last year that I was writing appreciative paragraphs of Miss Dove in connection with her activities in municipal affairs and the general life at High Wycombe. It is now announced that in July next she wishes to retire from the office of headmistress of Wycombe Abbey School, which she has held since 1896. "It is to her initiative and enterprise that the school owes its existence as well as its great prosperity."

* * *

ANOTHER resignation which will be received with great regret is that of Dr. Merry, the well-known rector of Lincoln College, Oxford, who now severs his thirty years' connection with the post of Public Orator to the University. The *Times* sums him up as an ideal Public Orator: a finished scholar, a man of the world, with fine presence and admirable voice, ready and witty in English, and not less successful as an orator in Latin. A printed memorial of his work will be found in his "Creweian Orations, 1881–1908," recently issued by the Clarendon Press. The post of Public Orator dates from 1584.

* * *

AT Magdalen College, Oxford, Mr. George E. Baker has resigned (as from Michaelmas Day, 1910) his office as estates bursar of the college, and the Rev. Cyril Robert Carter has been appointed to succeed him. It is some twenty or twenty-one years since Carter used to give me and seven other struggling college eightsmen the benefit of his rowing knowledge and enthusiasm. He was a popular man. From Cheltenham he took a scholarship at Corpus, and, after getting both his rowing and Rugby "blues," went to Wellington as an assistant-master and stayed there ten years. Since 1896 he has had his own school at Cordwalles, Maidenhead. His father was for many years bursar of Eton.

* * *

MR. GEORGE FREDERICK SYKES died recently at the age of eighty-one. For some years he was a classical master at Mill Hill School, in the days of Philip Smith. Then for more than twenty-five years he was principal of Forest House, Woodford. He gave up teaching in 1885, and joined the staff of Sir James Murray at Oxford.

* * *

PROF. FREDERICK PURSER, who recently died at the age of seventy, was a man of mark in Dublin University. He had a distinguished undergraduate career in Trinity College, and was elected in 1902 to the chair of natural philosophy. He was a generous benefactor to his college and university, chiefly in connection with the building of science laboratories. He also gave £10,000 to the Queen's College, Belfast. Prof. Louis Purser, who was co-editor with Dr. R. Y. Tyrrell of the "Letters of Cicero," is a cousin of the late professor.

* * *

PROF. GILBERT MURRAY has entered the lists as a champion of a freer method of teaching Greek than is now in vogue at the public schools. He does so apropos of a book, "How to Save Greek," written by Mr. T. Snow, whom I re-

member well as a familiar figure at Oxford, and who quite recently examined a form of mine in English history. Mr. Snow's remedy is to save Greek by abolishing Latin prose, and, so far as the earlier stages are concerned, Prof. Murray seems to approve. In fact, he is anxious at any cost to get to the spirit, the stimulating and inspiring content of the Greek books read at school. Let us "frankly give up the attempt to make any but specially gifted boys learn to write in the ancient languages. That leaves us with the reading of Latin books and the reading of Greek; the reading of them both as monuments of history and as living literature, to be digested and understood and enjoyed. The boy must acquire some grammar to do this reading; but not half nor a quarter such a burden of grammar as is needed for writing." There can be no doubt of the wisdom of Mr. J. W. Headlam's remark, that the boy should feel "that he wants to learn Latin and Greek in order to read Caesar and Homer." Undoubtedly also in the great majority of cases, boys in public schools under seventeen years of age learn Greek because they are compelled to do so, and being under compulsion they behave like sportsmen, make the best of the matter, and see how many marks they can score in Greek grammar papers, unseens, and compositions. As to thinking of the reading of a play of Euripides or of a dialogue of Plato as of one of the great events in their lives—well, the notion is preposterous. I am whole-heartedly at one with Mr. Snow and his champion. I have launched out boldly on these lines, and been brought back on to my haunches by the powers that be, who wanted accurate parsing rather than literary enthusiasm. The weight of grammar and composition apparatus is unconscionable: does anyone imagine that the literature lives under it, "to be digested and understood and enjoyed"?

ONLOOKER.

THE SERVICE OF TEACHERS IN ENGLISH AND FOREIGN SECONDARY SCHOOLS.[1]

By S. E. WINBOLT, M.A.
Christ's Hospital.

AT the general meeting of the Incorporated Association of Assistant-masters was presented and discussed a valuable report on the conditions of service of teachers in English and foreign secondary schools. The report, which contains some 170 pages, is an admirable piece of work (perhaps the best product so far of the Association), and deserves to be studied carefully by all who have the interests of English secondary education at heart—by local education authorities, by governing bodies and headmasters, and, not least, by patriotic parents everywhere.

The Association has recently been considering the pros and cons of the incorporation in the Civil Service of teachers in all secondary schools aided by public money. This inquiry was stimulated by an address given by Prof. Sadler in January, 1908. In January of 1909 a small committee was formed, with the co-operation of the Assistant-mistresses' Association, to investigate the conditions under which teachers serve in other countries, and to put facts clearly so that every educationist may have the information which will enable him to judge whether he would gain or lose by becoming a civil servant. Information has been collected from pamphlets and year-books, by correspondence with experts at home and abroad, and by sending investigators to foreign countries to settle doubtful points.

The report is an ordered collection of facts: it refrains from offering opinions, from commending or condemning, and it takes no account of the results or expenses of working of Continental systems, because such considerations were outside the terms of reference. The first four sections deal with France; Germany and Austria; Denmark, Norway, Sweden, and Finland; and the United States. In each section information has been collected on such topics as the following: Monetary, including such points as the teacher's preliminary outlay, remuneration by way of salary, pension, and sick pay; Legal, including appointment, dismissal, promotion, &c.; Personal, under such headings as freedom in school and out of it, and relations with pupils and parents; School Organisation; Relative Position of Teachers, and so so. The first thirty-seven pages are devoted to France; the section on Germany and Austria, which is necessarily more complex, occupies fifty-eight pages; the four northern countries take forty-one pages; and the United States is treated more summarily in thirteen. Of these the first two sections, those on France and Germany, are full and thorough, and afford the material which is really significant for a comparison between English and foreign secondary education. It is impossible in a short space to go in detail into these sections, and happily for the present purpose a fifth section is appended which institutes an impartial and general comparison between England and all the countries under consideration. It will be instructive to gather a point or two, and make an occasional quotation from these summarising pages.

It must be said at the outset that the balance is hopelessly against England, and the reason of this is suggested in the opening paragraph.

> The attitude of English people to education has been different from that of other nations. France and Germany take for granted the necessity of an efficient system of secondary education; the Governments provide it and compel its recognition. They, as well as Denmark, Norway, Sweden, and Finland, lay great stress on leaving examinations, and practically insist that all boys shall obtain either a higher or a lower leaving certificate. Everyone who wishes to enter a university or a profession must obtain the higher. The people of the United States have a whole-hearted belief in the efficacy of education, and are willing to spend money on it. In England it has been looked upon by some as a luxury for the leisured class, and by a comparatively small part of the community as a practical training or equipment for everyday life.

[1] "Report of an Inquiry into the Conditions of Service of Teachers in English and Foreign Secondary Schools." (Bell.)

In regard to preliminary outlay. In France the irreducible minimum by way of qualification for the secondary-school teacher is the licence, which is generally taken about the age of twenty-two. In Germany training is necessary, and the age at which a permanent appointment is taken is greater. In England a man may earn a salary earlier than in France or Germany, and he requires less qualification, but the outlay is probably greater. In France the minimum qualification costs about £300, in Germany £380; but these figures are not comparable with the cost of three or four years at Oxford or Cambridge. The chief factors on which remuneration depends are commencing salary, prospect and rate of increase, and maximum salary attainable. In Germany few men start with less than £150; in France all *agrégés* start with £148; in Holland men with £150, women with £100. In England the London County Council initial salary of £150 for men (and £120 for women) is above the English average, which for men is about £120. As to increase of salary, there is a well-marked difference between England and foreign countries. In Germany, Scandinavia, and most towns of the United States, increase in salary takes place automatically, and (though the increase is not annual) works out in Germany at about £9 per annum, and in Denmark at £5. In England increases of salary are granted spasmodically.

Not more than twenty-six or twenty-seven local authorities have salary scales at all, and schools under these authorities, together with a very few public and endowed schools, provide the only openings for teachers where a regular increase of salary up to a very modest maximum can be relied upon. The increment is rarely more than £10 per annum, and in many cases is only £5. The London County Council scale is the only one that is at all comparable with the salary scales in force in the German States, and the comparison is very unfavourable to the London authority.

Coming to maximum salaries, England is still more hopelessly behind. The average maximum of all the German States is over £300, without taking into account rent allowance (in several States it is £400), and twenty-one years is about the time taken to arrive at it. Recent figures for a number of English schools (chiefly municipal) are: of 1,903 men, the maximum for 822 was £200 or less, for 850 £200–£350, and for 231 over £350.

It appears, then, that in initial salary, in the various maxima obtainable, and in the prospect of a regular increase, the masters in English secondary schools are much worse off than teachers in similar schools abroad. This disparity is emphasised when viewed in conjunction with the absence of a general pension scheme in England.

It should be added that in France schoolmasters teach about sixteen hours a week, that in Germany a man's pay is the same, whether he takes Form I. or Form VI., and that the great disparity in England between the headmaster's and assistant-master's salary does not obtain in Continental schools. France, Germany, and the Scandinavian countries all provide pensions for teachers. In France a master contributes 5 per cent. of his annual salary, one-twelfth of his first year's salary, and one-twelfth of the yearly increment each time his salary is increased; but provision is made also for his widow and orphans. Pensions in Germany are the most liberal, often amounting to over 75 per cent. of the final salary, and in thirteen States no contribution whatever is required.

Pensions for masters in secondary schools are practically non-existent in England. So far as can be ascertained, in only twenty-four schools, employing 465 masters, have pension schemes been started, and in no case does the State make a direct contribution (except for the naval school at Osborne). These schemes do little more than provide very small retiring allowances, and the master usually has to bear half the cost.

In the matters of appointment, dismissal, and promotion, English and foreign methods are strikingly different, and here, too, the balance is against England; and in England the secondary-school teacher (*qua* teacher) has less status than in any of the countries with which comparison has been made. The closing words of the report merit quotation. The members of the reporting committee state that—

they have been deeply impressed by the care taken by foreign nations to secure for service in their schools men of capacity and of proved worth—men prepared to adopt teaching as the work of life. In a great measure they have attained their object by offering to teachers security of tenure and an expectation of a fair measure of material prosperity. This is surely the right method to pursue. Without capable and contented teachers there can be no true education. Whether the only method of securing this great reform in English education is by making teachers civil servants is a matter for earnest discussion. But until the welfare of the actual teacher is safeguarded, secondary education in England must cause disquietude to all thoughtful men.

MIND, BODY, AND ESTATE.

SCHOOLMASTERS of to-day are unlikely to forget that their labours form only a part, and in some respects a small part, of their pupils' education. A parcel of books upon the table prompts the trite reflection. Here are Biblical text-books, animadversions upon social evils and their reform, pages of advice respecting physical culture, hygiene, marriage, camp-life. Notwithstanding their diversity, each of these books makes a greater or less appeal to one or more of the many points of contact between School and Life.

The inner connection between several of these volumes is implied in the words of one[1] of them: "No man can be in perfect health whose moral nature is undisciplined, whose intelligence is undeveloped; will not the conduct be wrong and the bodily organ suffer? . . . *Mens sana* is the prerequisite for *corpus sanum*." The passage is

1 "Addresses to Teachers by Dorothea Beale." viii+79 pp. (Longmans.) 1s. 6d. net.

from one of twelve brief "Addresses" by Miss Beale, which Miss Raikes, her biographer, has recently published. These discourses, "bearing far more on the teacher's own personality and life than on anything else," were spoken *ex cathedra* on various occasions, to three only of which are dates assigned. They are the utterances of a most strenuous, deeply religious, even mystical yet forthright character, whose influence upon modern education has been wide and deep. Those who heard any of the addresses spoken will be glad to have the book; those who are readers only will value it as giving an insight into the mind and heart of Dorothea Beale.

The inveterate adherence to tradition so characteristic of the schoolroom is in no way better exemplified than in the attitude which the school commonly assumes towards the newer modes of Biblical study. The results of research and of criticism have entirely changed the point of view with reference to this branch of knowledge; yet it is but seldom that the school takes any account of the fact. The series called "The Bible for Home and School" aims at placing "the best modern scholarship at the disposal of the general reader."[1] The scheme of each volume includes "Introduction," the R.V. text, a commentary (of a kind not usual in school Bibles), notes, and a bibliography of works likely to be consulted by the general reader. The commentary to Galatians is both textual and historical, and, taken in conjunction with the "Appended Notes," it supplies a picture of the Early Church which should secure attention even from the schoolboy who has many "manuals" in his satchel. The "Genesis" is (in expression at least) a little more conservative, though it presents the assured textual conclusions; for its due appreciation, one feels that an "Introduction to Hebrew Literature" is needed which would set forth the general character of the results now established. Hints of these are not wanting, but they are found in detached passages of the book.

The author of "Stories from the Old Testament" is alive to the position of the boy who has studied the Bible on rigidly old-fashioned lines, and is to-day confronted with modern interpretations of his reading.[2] But it cannot be said that this book will prove altogether helpful in the quandary. It is a sort of anthology of Old Testament paraphrases, with a brief comment at the close of each tending to elucidate the *value* or meaning of the story. The aim would be more surely attained by means of a text and a good teacher. Given the latter, this class of book is as superfluous as collections of "Notes of Lessons."

"The Shorter Bible" presents the text of the Authorised Version in just such a form as the good teacher will prize.[3] Metrical passages are printed as such, and the prose is cast into paragraphs; the type is beautifully clear and the paper opaque though thin. Mr. Burrell finds room, and rightly, for some sixteen pages of the Apocrypha; but one misses "the Gentleman's Psalm" ("Domine, quis habitabit?"), the earliest of Christian writings, Thessalonians and Galatians, and the earliest Gospel.

From Comenius's day downwards we meet a succession of writers whose aim seems to be to make the teacher superfluous. To-day, these writers compile "Notes of Lessons," of which kind "Moral Instruction"[1] is an example. Its topics are frequently of the abstract sort which calls for close thinking, yet the treatment is slight and discursive. A good teacher will decline to use another man's notes of lessons; a bad teacher ought to be kept away from giving moral instruction. What position remains for these compilations?

"Social Hygienics"[2] leads us out into the world beyond the school, though its main topic has its relation to the smaller sphere also. The sober words of the brief and pregnant passage contributed by the headmaster of Eton stand out well against the rather fervid rhetoric and headlong assertions which make up the bulk of the book; it is a pity that neither the author nor Mr. Lyttelton indicates at any length the moral good, judged from the standpoint of sex relations, which may accrue from a course of biological study that *includes* the question of the transmission of life, say, in plants.

It is a saddening story which Mr. Marchant has to tell, and one feels that there is room for each and all of the reforms for which he pleads so warmly. Do we use as freely as we might for the sake of purity as well as for other virtues that contemplation of the Christian's Exemplar, which for children at least should constitute the major part of religious education? The prevailing type of controversy known as the "Religious Difficulty" suggests that we do not: there, religion always appears as something which is primarily intellectual and theological. A different conception distinguishes "The Fountain of Life,"[3] a very small volume, whose circulation, it is to be hoped, will by no means be confined to its author's communion. The centre of religious teaching, as it is here ably presented, is Christ as a Person who claims the love of other persons; this is a conception of the office of religious teaching which has always been powerful to sway the lives of men.

The education of the adult is the purpose of Sir Francis Galton's "Essays in Eugenics," a reprint of lectures, papers, and addresses delivered by him between 1901 and 1908.[4] The veteran thinker's opinion in this matter is well known;

1 "The Bible for Home and School." *Galatians*, by B. W. Bacon. 131 pp. *Genesis*, by H. G. Mitchell. 379 pp. (New York: The Macmillan Company.) 5s. and 2s. 6d. respectively.

2 "Stories from the Old Testament." By E. M. Wilmot-Buxton. xii+131 pp. (Methuen.) 1s. 6d.

3 "The Shorter Bible." Edited by A. Burrell. 664 pp. (Dent.) 7½s. 6d. net cloth; 2s. 6d. paste grain leather.

1 "Moral Instruction, Advanced Stage." By H. Major. 96 pp. (Blackie.) 1s. net.

2 "Social Hygienics." A New Crusade. By James Marchant. 122 pp. (Swan Sonnenschein.) 1s.

3 "The Fountain of Life." By One of the Authors of "Quick and Dead." 51 pp. (Longmans.) 1s. net.

4 "Essays in Eugenics." By Sir Francis Galton. 109 pp. (The Eugenics Education Society.) 1s. 6d. net.

here he gives good reason for his belief that social sentiment, when aroused, is of itself sufficient to promote marriages likely to ensure offspring of worth, and to hinder and in most cases to prevent unions undesirable from this particular point of view. He wishes also to promote the study of human heredity on quantitative lines in order to discover such conditions as favour, and such as forbid, mating for "worthy" offspring, using the epithet in all senses—moral, intellectual, and physical. The non-mathematical reader will be interested to see the outline of a simple introduction to biometry which is given on pp. 83-93.

Sir Francis is naturally a sturdy believer in individualism; we get a handling of somewhat similar problems on the opposite principle in "School Care Committees."[1] The reason for this book's appearance is the issue of regulations by the London County Council for carrying out the Acts relating to the provision of meals in schools and the medical inspection of scholars. The Council's regulations are modest and reasonable enough; but, as glossed in this *brochure*, they promise to afford to troops of incompetent amateurs numerous occasions of wasting public money. The reading of the duties of these committees given in this book appears to us to be as incorrect as its proposals are mischievous; its implied attitude towards the poor is the offensive one of the fussy busybody.

One turns with pleasure to "Health in the Home,"[2] where the leading characteristic is common sense plainly expressed for the benefit of all who have the charge of children in health and in sickness. The book contains exactly what such guardians ought to know and do. They might supplement this, however, if their charges are boys, by presenting the latter with "Camp Life"; "War Games for Boy Scouts"[3] might strike some youngsters as being as dull as quadratic equations—you don't always invest x with interest by dubbing it "Infantry" or "4·7 Gun," even though these are embodied in tin soldiers or "model" cannon. From the former book the tyro will learn about tent-pitching, fire-making, camp-cooking, making camp-furniture, and the accomplishment of using "a bit of rope" sailor-wise. He will find most wholesome advice respecting cleanliness of person and surroundings, so admirably and strikingly put that the lesson is likely to "stick." Indeed, the breezy style of the work ought to win every boy's heart; we are ourselves grateful for the delectable phrase "fooling about with blazes"—it hits off so many things! In short, given two boys of the right sort, a reasonably neglected back-garden, and this book, and lo! a paradise—for the boys.

[1] "School Care Committees." A Guide to their Work. By Maud F. Davies. 94 pp. (Burleigh.) 6*d*. net.

[2] "Health in the Home." Children and their Ailments. By Dr. J. Johnston. 163 pp. (Heywood.) 6*d*. net.

[3] "Camp Life and Campaigning for Boy Scouts." By a "B.P." Scout. 57 pp. "War Games for Boy Scouts." Played with Model Soldiers. By A. J. Holladay. 36 pp. Gale and Polden.) 6*d*. net each

THE CAMBRIDGE HISTORY OF ENGLISH LITERATURE.[1]

VOLUME IV. of the Cambridge History opens auspiciously with this sentence: "The translators of Elizabeth's age pursued their craft in the spirit of bold adventure which animated Drake and Hawkins." Mr. Charles Whibley's account of the translators is as attractive and inspiring as this opening sentence would lead one to expect. North, Holland, Florio, and the rest live again in these bright pages; we see the men, their aims, their courage, their achievement; and note the curious fact that while "the vast continent of classical literature" was brought within the ken of Englishmen, the one province that escaped discovery was that which should have had the quickest attraction: the golden age of our drama saw the translation of but one Greek play.

Prof. A. S. Cook, of Yale University, writes of the Authorised Version and its influence on subsequent literature. Among many things of interest in his chapter is this example of the elusiveness of style. The exquisite phrase in the A.V. of 1 Corinthians, ii. 10, "the deep things of God," contrasts with the ugliness of Tindale's "the bottom of God's secrets" and the banality of two recent versions, "the profoundest secrets of God" and "the depths of the divine nature."

Mrs. Creighton writes on her old subject of Sir Walter Ralegh. The literature of the sea and of travel is dealt with by Commander C. N. Robinson and Mr. John Leyland. Then come half-a-dozen chapters on minor poets, song-books, and miscellanies. Of these the most striking are Mr. Vivian's, on Thomas Campion, and Mr. Hugh de Sélincourt's, on Drummond of Hawthornden, the two Fletchers, and other successors of Spenser. The English pulpit from Fisher to Donne, the beginnings of English philosophy, and early writings on politics and economics occupy three more chapters. The Latinists, Burton, Barclay, and Owen, have a chapter to themselves, which might easily have been a dull one and is one of the most readable of all. Prof. Bensly shows that the "Anatomy of Melancholy" is not so completely a thing by itself as we are apt to suppose. The practice of profuse quotation was characteristic of the time: "It was an age when appeal lay to tradition and authority, and the tendency was fostered by the formation of libraries."

One of the great uses of this Cambridge History is that, owing to its scale, it can give us a much better idea of the relation of an author to his time and to other writers than is possible in the ordinary history. Prof. H. V. Routh treats of the Elizabethan pamphleteers, Lodge, Nashe, and Greene, the character-sketches of Hall, Overbury, and Earle, and the beginnings of the English essay. Mr. Aldis writes on herbals and books of country pursuits and pastimes, and also

[1] "The Cambridge History of English Literature." Edited by A. W. Ward and A. R. Waller. Vol. iv., Prose and Poetry, Sir T. North to M. Drayton. xii+582 pp. (Cambridge University Press.) 9*s*. net.

on the book-trade in the reigns of Elizabeth and James I.; and a chapter on the foundation of libraries—Bodley's was formally opened in 1602—concludes the volume. If any lovers of the great writers have feared that this encyclopædic history was coming to bury English literature and not to praise it, they may now rest assured that the work is not only of immense value to the student, but also likely to stimulate the enthusiasm and widen the reading of all who consult it.

THE LITERATURE OF GREECE.[1]

ALL these papers have been published before, but they were worth reprinting; yet we cannot but regret that Mr. Tyrrell did not add something to bring them up to date. This reflection is most strong when we read the two papers on papyri, which include the Constitution of Athens and Bacchylides, but exclude the great number of important fragments since found. The paper on Bacchylides is welcome as an estimate of the poet's value, written with discretion and taste. Another paper, on Sophocles, is not so complete; naturally, indeed, since the subject is more difficult. It is merely a review of some of Jebb's editions, but it includes critical remarks on the poet's genius. The remarks are disjointed, which is excusable in a review, but once more we regret that the author did not take the opportunity to give us a complete study. The most original of his papers is that on Pindar, although a good part of this also is given to popularising Metzger's theory of the structure of the odes. But here we do feel that Mr. Tyrrell has something of his own to say. We confess that he has made the German theory more attractive than its original author has done, and we very much like the remarks on metaphor. There is another essay on Plutarch, which may serve to direct attention to the remarkable merits of this man, now so neglected because he did not write in the choicest Attic. But we have yet to hear of a literary work that has exercised a wider influence than Plutarch's Lives, or deserved to do so. We are amused to find that Plutarch has become proverbial in Ireland by a slight misunderstanding: a criminal of whom Mr. Tyrrell tells was to be executed, "though he had as many lives as Plutarch."

We should like to direct attention to one or two good statements of principle. One is (p. 70) that the Greek drama allowed almost any violation of probability, so long as that lay outside the action of the piece. We do not remember to have seen this so clearly put before; it helps to explain much; *e.g.*, the beacons of the "Agamemnon." The other is that ancient tragedy, after rightly exciting the feelings about something, then allayed them artistically (p. 44); modern art neglects the due allaying of the passions aroused. This is due to sensational "curtains" and the exigencies of monthly magazines, "to be continued in our next."

One point we would add. The well-known passage about father, son, and brother in the "Antigone" (p. 59) may be spurious, but the sentiment is not only found in Herodotus, who borrowed his story from the East (it is extant in Pali), but it is quite consonant with modern Greek feeling. The modern wife will generally side with her brother against her husband.

[1] "Essays on Greek Literature." By R. Y. Tyrrell. xii+202 pp. (Macmillan.) 4s. net.

EDUCATION ABROAD AND IN ENGLAND—A COMPARISON.[1]

By JOHN C. MEDD, M.A.

IN education, as in other matters, each nation must solve its own problems for itself. Every system of education should be the expression of national characteristics and adapted to national idiosyncrasies. Still, lessons which we can ill afford to neglect may be learnt from the study of developments in other countries, and, in some respects, it is much easier to ascertain what is being done abroad than at home. Thanks to the admirable series of Special Reports inaugurated by Prof. Sadler, we can make ourselves more or less familiar with the details of foreign education. With regard to England, we are not so fortunately situated; the Board of Education gives little or no information as to new and successful experiments, and its reports have mainly a statistical value. To this I largely attribute the common depreciation of English education. Writers and speakers find it easy to compile glowing accounts of what is accomplished elsewhere, while there are no published records available here. This lack of information as to the progress within recent years renders a comparison between English and foreign systems difficult and misleading.

Attention is commonly concentrated upon Germany and the United States. This is natural, having regard to their extraordinary industrial development during the past generation and the extent to which it may be attributable to their systems of education. With regard to Germany, it would be remarkable if a nation forced to repair the ravages of war by intellectual effort—you remember Humboldt's famous expression in 1807: "Der Staat mus durch geistige kräfte ersetzen was er an physischen verloren hat"—had not in the course of a century become pre-eminent in one or more departments. But when you test the value of the system, as I have previously indicated, you will find, I think, that the general balance is in our favour. The facilities for technical and scientific instruction are as great here as in Germany, but where the German has the advantage is in the better quality of the pupils who attend those colleges and schools. This is entirely due to the excellence of their secondary education, and until we can make the Board of Education and the public realise that prolonged and sound general education is the essential antecedent to successful technical and scientific training, the quality of the material supplied to our technical and scientific institutions will remain inferior. By its regulations, the Board of Education seems hardly to appreciate the supreme importance of this. A course of four years compares most unfavourably with the courses at the Gymnasia and Realschulen, and it is a fatal mistake to allow that course to be shortened in any circumstances, or to permit individual pupils or special classes

[1] Abridged from a paper read at the North of England Education Conference, Leeds, on January 8th, 1910.

to follow a curriculum varying from the curriculum approved for the rest of the school. To remedy the glaring defects in our system of secondary education, and to place our pupils upon terms of equality with those in Germany, it is imperative to fix a higher standard and strictly to adhere to it.

Of the United States as a whole it is difficult to speak. Each State has its own system, and the only common characteristic is the lavish expenditure upon buildings and equipment. The fundamental principle in the United States is based upon the rational assumption that the proper and only way for a young man to learn the practical side of his profession, together with business details, is by working as a regular employee, and that the only place where he can learn properly the scientific and the cultural subjects is at a school under trained teachers. We need also a bureau of education as well organised and endowed as that at Washington to act as an imperial centre for information and advice.

Notwithstanding the constant criticism levelled against the ancient universities and great public schools, I do not consider that they fail to realise their respective functions. Their adaptation to modern needs is a necessity of which they are themselves conscious, and reform is their constant endeavour, but they must be on their guard lest in yielding to some popular and temporary demand they sacrifice the higher purposes for which they exist. We must remember that they were primarily designed for the education of the governing and administrative classes. No institution for education, whatever its organisation and programme, can ensure the future success of all its members: human nature being what it is, a proportion of failures is inevitable. We should take stock of the average product. One of the most distinctive elements in English public life is the administration of county and other local affairs, which is voluntarily carried on by men of the highest integrity who devote themselves to it without thought of recompense or reward, and are mainly the product of Oxford and Cambridge, or Eton, Harrow and similar schools. No other nation can show anything comparable to this, nor can a man's capacity to serve his country be measured by his purely intellectual attainments. The opposition to the great public schools comes principally from those who take what may be termed a sectional view of education—a view, that is, which expects those schools to subordinate the general welfare of the community to the interests of one section of society, usually the commercial or industrial. Such is not the function of a great public school: it is to provide a truly liberal education based upon the best classical literature; to create an environment in which the habits of resourcefulness, adaptability, and self-reliance may be acquired, and to turn out men competent to direct the affairs of a world-wide Empire. In this they have unquestionably succeeded.

It is with reference to the ordinary secondary schools that the position is so unsatisfactory, and for their improvement we must learn from Germany or Holland, the burgher schools of which furnished the Germans with their models. Simultaneously, the facilities for promoting the easy passage of suitable pupils of all ranks from one type of school to another ought to be increased. The allotment of a quarter of the places at each school without the payment of fees is not in itself sufficient, and may in particular cases be actually detrimental to the well-being of individual schools. Principles of instruction at an elementary school differ so widely from those in a secondary school that it is desirable for pupils to proceed as soon as possible from the former to the latter, and the Board of Education recognises this by offering a small grant of £2 for children between the ages of ten and twelve at a secondary school; but it is difficult to understand why that grant should be confined to those who have been at a public elementary school, for there are many whose early education has been otherwise obtained who should be equally entitled to earn the grant when they go to a secondary school. Further, to bring efficient secondary education within reach of all, bursaries should be provided to cover the cost of board and lodging. To attempt to maintain a struggling secondary school where there is no effective demand for one involves financial loss and rarely confers any educational benefit. It would be preferable on every ground to convert such schools into higher elementary schools upon the model of those recommended by the Consultative Committee and those in France. Schools of this type in no way compete with secondary schools, and are intended for a different class of pupils. They meet the requirements of those who can prolong their school career until the age of fifteen or so, and whose livelihood will subsequently depend upon some form of manual employment. It is essential, however, that the grants for these schools should be upon the same liberal scale as in Scotland.

In elementary education as a whole we stand unrivalled, with the possible exception of Holland, where the methods of instruction are still, as Cuvier described them, "au-dessus de tout éloge." The great need, commonly, is for more practical instruction, some relaxation of the regulations as to building and equipment for manual instruction and domestic science, and the introduction of a system of supplementary courses. We require, as Prof. Sadler has pointed out, a new type of school in which less attention is paid to purely literary subjects and more to the practical side.

The teacher is the most important factor. Upon his character, capacity, and sympathy the quality of each school depends far more than upon the public spirit of the local authorities and managers. His training is still too limited and hampered by the exigencies of the certificate examination. In the preface to its Regulations the Board tenders excellent advice, but it will remain a counsel of perfection unless the cramming to which the principals of the colleges and the students alike are compelled to resort is rendered unnecessary. The normal schools of both France and Holland are conducted on far more enlightened principles. It is recognised that there are certain subjects, such as the theoretical and practical study of natural and physical science, which every teacher, whether destined for an urban or a rural district, ought to know. We do not want to create two distinct classes of teachers or to establish separate institutions for those who will have charge of country schools, but we do want the student during his period of training to become qualified to discharge all those duties which are involved in the modern conception of an elementary school. In Holland, for instance, every student has a systematic course of instruction in horticulture and the elementary principles of agriculture. In woodwork every student makes a complete set of the models of the Swedish Slöyd system and of objects required for other lessons, such as chisels, rulers, levers, and scales; models of tools or engines to assist in explaining different trades and industries; implements for the manufacture of linen and lace, &c. In addition, each student constructs an aquarium, terrarium, and a case for insects to be collected and attended to by himself. Beyond acquiring a mass of information invaluable to him in his profession, he learns

how to make the apparatus necessary for object-lessons in the primary school.

The outstanding blot upon English education is the absence of any adequate provision for those who have completed the elementary-school course, but do not proceed to a secondary school. To expend millions upon these children until the age of thirteen or fourteen and then to turn them over to the education of the streets is disastrous from every point of view. It is during the period of adolescence that the habits are formed which will determine the boy's or girl's whole future career. Cast adrift as they are in the vast majority of cases to rely upon their own resources, they constitute a grave social danger, swell the ranks of the unemployed, and gravitate to the workhouse or the gaol. It is computed that only one in six between the ages of fourteen and twenty-one are receiving any systematic instruction. Taking those between fourteen and eighteen, 2,000,000 out of 2,800,000 have done with education altogether. Minister after Minister of Education deplores this, but no practical steps have ever yet been taken by any Minister to remedy the evil. Within the past two years there has been an insignificant increase in the number of urban continuation schools, but those in rural districts are tending to diminish.

The latter fact need occasion no surprise, for the increasing demands of the Board have rendered it literally impossible for local authorities to find the requisite money. Unless such financial assistance as was suggested in the Bill presented to Parliament by Sir John Brunner is forthcoming, progress is impossible. It is idle to say that country children will not attend a continuation school. Where the instruction is attractive, practically useful, and calculated to increase wage-earning capacity, the schools are welcomed alike by parents and children. But in the interests of the country itself, no less than those of the rising generation, some form of compulsion is needed—compulsion on local authorities to establish a continuation school within reach of every child, and compulsion upon all children who are not being otherwise educated to attend such a school. Since 1900 every commune in Holland must organise a continuation school for those who wish to profit by it, although attendance is not obligatory. In Germany, as is well known, there is compulsory attendance, and, even if public opinion be not yet ripe for it in England, there can be no justification for declining to permit local authorities to frame bye-laws to enforce attendance under certain conditions, subject to the approval of the Board of Education. Here, again, is another instance in which preferential treatment has been accorded in Scotland.

Continuation schools, however, are not alone sufficient. A few trade schools have been established, but they should be the rule and not the exception. The Ambachts or trade schools of Holland furnish a good example. Those admirable institutions owed their origin to private or local initiative, but are subsidised and inspected by the Government. The course usually lasts for three years, and the instruction is continuous throughout the year. The subjects naturally depend to some extent upon local circumstances, but generally include drawing, geometrical drawing, physics, mathematics, mechanics, wood and metal work, all taught technically and with a view to particular industries. In some cases instruction is also given in masonry, furniture and instrument making, painting and house decoration. The results are undoubtedly excellent.

Now that the Board of Education has substantiated its claim to be the responsible authority for agricultural education, it would be wrong to ignore that question altogether. We are as far behind other nations in that respect as in the training and instruction of children when they leave the elementary school. In proportion to the agricultural population we have a greater number of advanced colleges than are to be found in any country, but for the rank and file of young farmers and small-holders facilities for acquiring that knowledge which to-day is essential to the successful cultivation of the soil can hardly be said to exist.

In conclusion, with the exception of the two branches of education to which I have just referred, we have no reason to be despondent about the situation in England. One must admire the generosity which enabled commissions of investigation to be sent to the United States, but I am confident that for practical purposes it would be far more useful carefully to study what is actually being done at home. A single successful experiment here is of infinitely more value than the examination of colleges and schools in other countries, where the social, economic, and industrial conditions may be entirely different.

DO WE TEACH TOO MANY SUBJECTS IN THE ELEMENTARY SCHOOLS? [1]

I.

By Spurley Hey, B.A.
Director of Education, Rotherham.

There are many objections to the present-day curriculum as required by the central and local authorities and as drawn up by the head teachers. In my opinion, the time-table contains (*a*) too many subjects separately and distinctly treated; (*b*) subjects covering too long a period of the child's school life; and (*c*) subjects to which so little time is given that such time is little better than wasted. It will be readily admitted in a general way that the question as to whether any given curriculum, both as regards its constituent subjects and their treatment, can be efficiently and effectively carried out must depend very largely upon the special character of the school as determined by (*a*) the length of school life of the child; (*b*) staff; and (*c*) size of classes. On all these grounds I am convinced that too much is attempted, and, mainly as a result, too little is achieved in the elementary schools, and that, in the words of a headmistress of long experience and ripe judgment:

"The work is not so thorough as formerly; the knowledge of certain subjects is only superficial; the principles underlying facts, the connection between cause and effect, and many of the higher aspects of things have to be hurried over, if touched at all; the children have a smattering of many subjects and a thorough knowledge of few."

Consider the history of the school curriculum since the Act of 1902. Every subject which appeared on the time-table then still remains, but with a very significant difference. In almost every case the subject has been broadened and extended so as to demand, not only more enlightened treatment, but much additional time. Arithmetic must now contain provision for weighing, measuring, and many other forms of practical work; reading must provide for additional text-book work, and silent reading must be practised; needlework requires garments from all pupils; and so on throughout the whole list. Each increase may be little in itself, but the aggregate tends to make the curriculum burdensome and unworkable. Not only have

[1] Abridged from papers read at the North of England Education Conference, Leeds, on January 6th, 1910.

the old subjects extended and increased their demand on the school time, but additional subjects have become compulsory. The history or geography of a few years ago has now become history and geography; drawing must now be taught in all girls' departments, and so on.

Speaking generally, there is no single important condition at present existent in the elementary schools to warrant the detailed and extensive curriculum imposed on them.

During recent years a great change has been brought about in the teaching of young children generally throughout the country. I believe that those years of the child's educational life prior to his transference to an upper department are, with regard to curriculum, the most sensible, successful, and certainly the most pleasant. The great impetus given to child-study during the last few years has led to a more humane, intelligent, and sympathetic treatment of young children, and when the child has once overcome the initial difficulties attending upon the commencement of school work, he lives a life of natural mental and physical development under the sympathetic influence of the teachers in our infants' departments. In many respects no better prepared or more responsive material could be wished for than that which year by year graduates into the upper departments. At this point, however, these young children experience their first great educational shock, a shock from which many fail to recover. Although less general at the present time than formerly, there still remains a great lack of appreciation and understanding between these two separate, distinct, and completely detached staffs which deal with the elementary-school child, before and after the age of about seven years. At this age the young child has not suffered from too severe a discipline; his mind and body are slowly and gradually awakening to all their possibilities under the happier surroundings attaching to the more suitable curriculum and better educational treatment now prevalent in the lower school. Mainly through their games and occupations, their music and play, the children have been allowed to develop in a free and natural way, and in the process they have learned to love their school. In their childish minds transference to the upper school no doubt opens up a vision of the continuation under even better conditions of their happy school life. How bitterly disappointed they must be!

I believe it is within the first few months of their work in the upper department that many children become imbued with a deep feeling of disappointment and almost repugnance towards their school work. Their games and occupations are to a large extent cut off, their free and natural development is checked, and much of their new work is very dreary and mechanical as compared with their routine of the past. With this transference the large proportion of school time previously devoted to hand and eye training is reduced, in many cases, to a few minutes per week, but, strange to say, only to be again increased for a short period before the child finally ceases attendance at the elementary school. It appears somewhat incredible that almost the whole of the time devoted to properly organised hand and eye movement and training should be crowded into the first two and the last two years of school life, with a disastrous interval for which nobody appears to take the responsibility. Instead of the school work being continued on the principles carried out in the infants' department, the child is faced with old subjects treated in so changed and so formal a way that he scarcely recognises them, and with new subjects the introduction of which might well be postponed. He must begin formal arithmetic with a weary sequence of examples in the four simple rules, history, geography, and practically the whole list of subjects upon the elementary-school time-table.

Surely the teachers in the upper departments might endeavour to cultivate a greater desire to know and to appreciate the principles and methods upon which the education of the children committed to their care has previously proceeded. Of this I am convinced, that in our elementary schools to-day there are thousands of educational "outcasts" who are condemned to pass the greater part of their school life at the bottom of the upper department because of lack of co-operation amongst the various departments, and because of failure amongst teachers to understand and to appreciate each other's work.

In conclusion, I may urge the following suggestions, which, if acted upon, would tend to make the curriculum more suitable to the children and more workable for the teaching staff:

(i) A higher school leaving age.

(ii) A greater correlation of subjects at present on the elementary-school time-table.

(iii) More co-operation between the different departments with regard to principles and methods.

(iv) The extension of infants' school methods and, in certain cases, subjects to lower standards of upper departments, and the exclusion in such standards of much of the present formal teaching in writing, arithmetic, history, geography, &c.

(v) Special facilities for children over Standard V. to allow of a curriculum giving a large proportion of time to English and domestic work for girls, and English and handicraft for boys.

II.

By T. P. SYKES, M.A.

Ex-President of the National Union of Teachers.

I DO not think that we teach too many subjects in elementary schools, and I speak from an experience of more than thirty years in such schools. A right decision on this question depends primarily upon the point of view we take of the real function of the elementary school. Is it that we are simply training the boys to become efficient manual workers or even efficient clerks? I think not. Our task is a much nobler one than that. Matthew Arnold once said that he looked upon the elementary school, "not as a place for enabling the maximum number of children to write and spell and do a given number of sums without mistake, but rather as a centre of civilising and refining influences."

I commend that view of its mission to the notice of those who would unduly cut down the curriculum of the elementary school, because it has a direct and forceful bearing on the question.

The curriculum of the elementary school was strictly limited under the system of payment by results. Is that what we are craving for to-day? I should be sorry to think that teachers take anything like so low a view of their tremendously important duties. The system was most uneducational, as everybody nowadays will agree. It was a crude and a cruel system, but from one point of view it had this tremendous advantage for the teacher—he knew exactly where he stood. I believe that the principal reason why some teachers to-day are in favour of a restricted curriculum is that they are in a state of bewilderment. They do not know where they stand. There are so many critics, professional and others, of their work that they crave for the days of a simple, restricted code

of subjects so that they may meet the critics on level ground. But in my view that is no more or less than a cowardly getting round a difficulty which ought to be boldly faced, both on educational and on professional grounds. The teacher in an elementary school is so set about with scaffolding that he cannot even so much as get an eye on the educational building he is rearing or trying to rear within.

I should like to insist on the simple fact, with all the force I am capable of, that time-tables and schemes of work are not necessary adjuncts to the education of any child. On the contrary, they often become the most serious of obstacles. We are in danger at the present day of having true educational effort almost completely schemed away in our schools. Of making time-tables and drawing up schemes there is no end. They are nothing but a tremendously harmful incubus on the shoulders of an enthusiastic teacher, because children cannot be educated by schemes, be they never so cunningly contrived. It is the personality of the teacher which counts, and elaborate schemes drawn up and approved tend to rob the teacher more and more of the influence of his own personality. He becomes more and more of a machine intent on producing for the satisfaction of an outside critic a purely machine-made article.

On the question of the school time-table, I would probably go much further in the matter of simplification than the most enthusiastic opponents of an extension of the curriculum. I would limit the subjects appearing on the school time-table to two in number. They should be English and mathematics, and on those the teacher should be free to make whatever subdivisions he thought necessary for the smooth and effective working of his school, class by class, without any interference from anybody. That would be putting upon him a tremendous responsibility and any amount of hard work, but I believe that teachers would rise magnificently to the occasion and use their new-found freedom with splendid educational effect. The teacher would then be master of his school. He is not master at the present time. There is quite a small crowd of people outside, each of whom is quite sure that he knows better than the teacher what should happen inside the school down to the minutest detail. In all the essential things that go to make an efficient school governed by a strong personality, in such things as time-tables, schemes of work, and even methods of teaching, he is the slave of the outside critic, a man who probably has never handled a class or managed a crowded school through the dull, dark month of November in his life.

On such a broad plan of operations it would naturally follow that schools would vary largely in aim and possibly in attainments, but anything they might lose in that direction would be more than made up for in the free impress of the personality of the teacher upon his children. And, after all, in the elementary school, with its mixed population, it is the personal impress of the teacher which counts. Complex time-tables and elaborate schemes of work setting out in detail what has been done in a specified time, and what it is proposed to do, are but so much educational shop-window dressing. They owe their existence to the underlying, perhaps unexpressed, conviction of those in authority that the teacher is an incompetent individual, and that unless buttressed up by these multitudinous regulations he would do nothing in school or something worse than nothing. No true teacher can ever consent to be bound hand and foot by time-tables and schemes of work, because he can rightly gauge his task only when he comes face to face with the children in his school and sees them. I plead for freedom in educational work. Especially is this necessary in the case of children coming from the lowest social scale. And the more freedom the State gives to the teacher the more value will the teacher yield in return to the State.

There is just one more argument which it seems to me should weigh powerfully against any undue restriction of the curriculum of the elementary school, and it is this—probably 90 per cent. of the children in our elementary schools will never see the inside of any school of another type. Amongst them are to be found brains of the finest texture, boys and girls who would respond with amazing quickness and delight to a few experimental lessons given under proper conditions on the wonders of chemistry, of electricity, botany, human physiology, and so forth. Why should this stimulus to a fuller after life be barred to them? Is that to be another of the penalties inflicted upon these bright boys and girls for the crime of being poor? In my view the educational foundation of the elementary school should be broadly laid, and no subject which is calculated to have an elevating and refining influence upon the child should be shut out.

THE TEACHING OF ART.

VARIOUS aspects of the art-master's work were discussed at the North of England Conference. Mr. R. Radcliffe Carter, headmaster of the Walsall Municipal School of Art, read a paper on modern ideas in general art instruction. He pointed out that the teaching of art—or, as he called it for the sake of simplicity, the teaching of drawing—has almost entirely been remodelled in primary and secondary schools, not only with regard to the methods employed, but also with regard to the purpose of the instruction. Drawing has at length come to be considered a necessary part of general education. That is a radical change, and the most modern of all modern ideas of art instruction. It is true that drawing has always been one of the subjects of primary- and secondary-school teaching, but it is only quite recently that teachers, other than art specialists, have found it possessed of educational virtues commensurate with the time expended upon it. A truth is being discovered which has always been obvious to an artist, namely, that drawing, properly undertaken, possesses a wonderful power of awakening or stimulating the latent faculty of observation. In other departments of education a child is being taught to distinguish between knowledge and information—to regard the one as a matter of observation and experience, and the other as a matter of hearsay. At the same time, the splendid properties possessed by drawing in the cultivation of that faculty of knowledge or observation are coming to be estimated at their true value. This discovery, as I said before, is the most modern and the most momentous idea in junior art instruction to-day.

There has been a wholesale discarding of conventional drawing. There has been a substitution of real objects for the abandoned "copies." "Common object drawing" and "nature drawing" have become familiar phrases in the school vocabulary. Memory drawing and recreative drawing are recognised elements of the time-table. The supreme attractiveness of colour as a part of a drawing exercise is being admitted, and the constructive instinct of children is being fostered by exercises in fashioning the images of objects with modelling clay. In all these things the importance of developing the habit of graphic and plastic representation is implied, and the fact that such importance is now acknowledged is an excellent thing.

Mr. C. Stephenson, principal of the Bradford School of Art, dealt with colour-study in relation to general art and to trade. One of the chief difficulties in the application of school teaching to any form of specialised work is, he said, due to the necessity of generalising. This necessity is caused by the variety of trades that the different students in a class often represent, and sometimes by the teacher's tendency to deal with general principles rather than actual instances. He considered two questions:

What types of colour teaching should we admit into our schools? In other and plainer words, shall we limit ourselves to the essentially artistic colours, the æsthetically ideal, or shall we admit more of the trade type of colour, and, if so, how far may we go in this direction?

How, or by what methods, can we teach colour?

It is impossible, he remarked, to teach the art of colouring by a series of theoretical lectures based upon the science of light, for the very reason that the subject is not science, but art; but, at the same time, lectures can be usefully employed as accessory to practical work in colour. In such a series of lectures it is possible to make clear in the designer's mind the power of contrast of the complementary or opposite colours, and *vice versa* in the case of the closely allied colours. It is also possible to make them understand the effects of simultaneous contrast, and many of the difficulties in colour harmony arising out of it. At the end of the lectures a considerable amount of useful and practical information can be imparted by means of demonstrations illustrated with manufactured objects, such as textile fabrics, explaining what class of colours is suitable for various purposes, and how the different harmonies of effect are arrived at. It seems advisable that students should be made to study the good examples of either ancient or modern periods. Probably the best way to study these colour schemes is by making careful copies from them. All the value and subtlety of colour is lost unless the copy be a reasonably close one. This system of using other people's colour schemes might be utilised still further by allowing the student to adapt them into his own design. This might safely be done until sufficient knowledge and experience have been gained to originate original schemes.

Discussing modern ideas of art education, Mr. R. G. Hatton, of Armstrong College, Newcastle-upon-Tyne, said art is delight, and it must be delight in the things about us or in our thoughts. Translating this into terms of the class-room, it would mean that the teacher has first to gain from his students recognition of objects as what they are in the round of life, and to get them rendered somehow or other, and afterwards to attend to methods and technique. It is more important that the student should represent a pot as a round object than that he should dwell upon its form in detail. Roundness, tone, and texture are more important at the outset, because the student must be made conscious of the object itself. If the subject is a head, the drawing should first of all mean "head," and not be a student's exercise, however skilful and careful. It does one little good to draw either pots or heads if the drawings appear to be exercises rather than objects.

The first fact of study is to gain identity, and it is quite possible for a student to work hard and to study deeply and yet all the time lose the faculty of presenting identity. In this process the teacher is not merely to stand by and let the student record time after time his ignorance. People who think that no instruction should be given overlook two facts: first, that the student is not the innocent person he is supposed to be; and, secondly, that the teacher is not necessarily the stupid person he is sometimes made out to be. To develop the student's powers of honest sight and honest expression is the teacher's duty, and any word of his which interferes with either is to be condemned. But surely the teacher is to be trusted in this, or he should not be appointed. As a teacher, Mr. Hatton would strongly object to anyone writing down rules as to when he should make his explanations to his classes or how he should make them.

Mr. Haywood Rider, headmaster of the Leeds School of Art, in considering modern developments of applied art instruction, pointed out that the important goal which teachers of art should have in view is the education of young people to an appreciation of simple and beautiful things for domestic use and ornament, so that there shall be no monopoly by any class of the pure enjoyment and elevating pleasure to be derived from such environment. The first thing to be done is to educate the children if the taste of the masses is to be raised to a higher level, and, therefore, the influence of the teachers in elementary schools must be brought to bear on this important question, and should be one of the chief factors in accomplishing this most desirable end. Schools of art will have plenty to do in developing, directing, and encouraging, but the first and vastly important work of awakening the artistic taste must come from the teachers of the primary schools.

If the teacher himself has need of instruction or illustration or examples of art objects, he should be able to procure them from the school of art. The teacher presents to his pupils some fine example of domestic earthenware, and dilates on its beauty of colouring or form; he directs attention to some particular house or hall, or some country mansion; he places before the children some of Nature's own handiwork, showing the beauties of form and colour, and the children's attention being repeatedly drawn to these things, the result will be the acquiring of a taste more or less perfect for that which contains the elements of beauty; for these things which contain the greatest assemblage of those properties that best please the eye. This taste, once acquired, will grow with the pupils' growth, and mature as they mature in years, until, though their position in life measured financially may not enable them to acquire expensive treasures of art, still their whole attitude with regard to these things will be changed from one of indifference to one of active resistance in their own small domain against the unwelcome intrusion of ugliness in any form.

OXFORD UNIVERSITY LOCAL EXAMINATIONS.

SET SUBJECTS FOR 1911.

Preliminary.

Religious Knowledge.—(*a*) Ezra, (*b*) St. Luke (chap. vi. to end), (*c*) Acts (chaps. i.–xii.), (*d*) Church Catechism.

English History.—Either the Outlines from 55 B.C. to 1399, or the Outlines from 1399 to 1714, or the Outlines from 1689 to 1837.

English Author.—(*c*) Either (α) Defoe, "Robinson Crusoe," Part I., or (β) Scott's "Lady of the Lake"; (*d*) either (α) Scott's "Ivanhoe" or (β) "Poems of England," by George and Sidgwick (xi.–xvi., xxv.–xxviii., xxxii. to end) (Macmillan).

Geography.—(iii) The geography of *one* of (*a*) England and Wales, or (*b*) Scotland and Ireland, or (*c*) India.

Elementary Latin.—"Tales of Early Rome," Sections I.–IV., by J. B. Allen (Clarendon Press).

Elementary Greek.—Marchant's "First Greek Reader" (pp. 1–27) (Bell).

Elementary French.—Either "Pierre et Camille," by Musset (Hachette), or "Quinze jours au désert," by Tocqueville (Clarendon Press).

Elementary German.—"Der Schüsselbund" and "Jagderfolge" in "Short German Plays," by E. S. Buchheim, First Series (Clarendon Press).

Junior.

Religious Knowledge.—(*a*) Ezra, Nehemiah, Haggai, (*b*) St. Luke, (*c*) Acts i.–xv., (*d*) Prayer Book.

Ancient History.—Outlines of Roman History from 509 to 242 B.C., with special questions on the First Punic War.

English History.—(*a*) Outlines of English History from 55 B.C. to 1135 A.D.; or (*β*) Outlines of English History from 1066 to 1485; or (*γ*) the Outlines of English History from 1485 to 1714; or (*δ*) Outlines of English History from 1689 to 1837.

General History.—(*a*) Either from 1066 to 1516, or (*β*) from 1500 to 1715.

Foreign History.—Outlines of General European History from 1815 to 1876.

English Literature.—(*c*) Either (*a*) Tennyson's "The Marriage of Geraint," "Geraint and Enid," "The Holy Grail," or (*β*) Shakespeare's "Merchant of Venice"; (*d*) Shakespeare's "Midsummer Night's Dream," "As You Like It," "Tempest"; (*e*) either (*a*) Shakespeare's "Julius Caesar," or (*β*) Shakespeare's "Richard II.," or (*γ*) Scott's "Marmion," or (*δ*) Scott's "Rob Roy"; (*f*) either (*a*) Milton's "Comus," "L'Allegro," "Il Penseroso," "Sonnets," or "Poems of England," by George and Sidgwick (Macmillan); (*g*) either (*a*) "The Oxford Treasury of English Literature," vol. i. (pp. 82 to end), by G. E. and W. H. Hadow, or (*β*) Boswell, Gray, Sonnets (Milton and Wordsworth), Charles Lamb, in Select English Classics, edited by A. Quiller-Couch (Clarendon Press); (*h*) either (*a*) Kingsley's "Westward Ho!" or (*β*) Hakluyt's "Voyages of Elizabethan Seamen" (Hawkins, Frobisher, Drake) (Clarendon Press).

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 I.; Virgil, Aeneid IX.

Greek.—Scenes from Sophocles, Ajax (Clarendon Press); Plutarch, Julius Caesar (Clarendon Press).

French.—Either Mérimée, "Colomba," or Balzac, "Le Colonel Chabert" (Clarendon Press).

German.—Riehl, "Seines Vaters Sohn" and "Gespensterkampf" (Clarendon Press).

Senior.

Religious Knowledge.—(*a*) Ezra, Nehemiah, Haggai, (*b*) St. Luke, (*c*) Acts i.–xv., (*d*) Acts i.–xv. in Greek, (*e*) Galatians and St. James, (*f*) The Prayer Book.

Ancient History.—Outlines of Roman History from 509 to 242 B.C., with special questions on the First Punic War.

English History.—Either (*a*) 55 B.C. to 1135 A.D., or (*β*) 1042–1485, or (*γ*) 1399–1603, or (*δ*) 1603–1763, or (*ε*) 1763–1880, or (*ζ*) 1792–1880, or (*η*) the Outlines of English Political History from the Anglo-Saxon Conquest to 1837.

General History.—Either (*a*) from 1066 to 1516, or (*β*) from 1500 to 1715.

Foreign History.—Outlines of General European History from 1815 to 1876.

English Literature.—(*c*) Either (*a*) Tennyson's "The Coming of Arthur," "The Marriage of Geraint," "Geraint and Enid," "The Holy Grail," or (*β*) Shakespeare's "Merchant of Venice"; (*d*) Shakespeare's "Midsummer Night's Dream," "As You Like It," "Tempest"; (*e*) either (*a*) Shakespeare's "Julius Caesar," or (*β*) Shakespeare's "Richard II.," or (*γ*) Scott's "Marmion," or (*δ*) Scott's "Rob Roy"; (*f*) either (*a*) Milton's "Comus," "L'Allegro," "Il Penseroso," "Sonnets," or (*β*) Wordsworth, Selections by Matthew Arnold (omitting Reflective and Elegiac Poems) (Macmillan), or (*γ*) Essays on Addison, by Macaulay and Thackeray, &c., selected by G. E. Hadow (Clarendon Press); (*g*) "The Oxford Treasury of English Literature," vol. i. (pp. 1–282), by G. E. and W. H. Hadow; (*h*) Hakluyt's "Voyages of Elizabethan Seamen" (Hawkins, Frobisher, Drake) (Clarendon Press).

Geography.—(i) Principles of Geography, (ii) British Empire, (iii) *one* of (*a*) Europe, (*b*) Asia, (*c*) North America (including West Indies).

Latin.—Caesar, De Bello Gallico I. and II., or Virgil, Aeneid IX. and X.

Greek.—Euripides, "Alcestis," or Xenophon, Anabasis I. and II.

BOOKS FOR THE GEOGRAPHY LESSON.

(1) *Story Lessons in Geography.* By Margaret Hardie. 55 pp.; illustrated. (Charles and Dible.) *2s. 6d.*

(2) *A Practical Geography.* By James and William Miller. vi + 116 pp.; maps and illustrations. (Bell.) *2s.*

(3) *A Scientific Geography—Asia.* By Ellis W. Heaton. 148 pp.; sketch-maps and diagrams. (Ralph, Holland.) *1s. 6d.*

(4) *A Systematic Geography—British Isles.* By G. W. Webb. vi + 94 pp.; maps and diagrams. (Methuen.) *1s.*

(5) *By Road and River—British Isles.* By E. M. Wilmot-Buxton. vi + 154 pp.; maps and illustrations. (Methuen.) *2s.*

(6) *Cambridge County Geographies. Westmorland*, by J. E. Marr; *Hertfordshire*, by R. Lydekker; *Wiltshire*, by A. G. Bradley. 160–180 pp.; maps, diagrams, and illustrations. (Cambridge University Press.) *1s. 6d.* each.

To write a geography for the infants is no easy task. The authoress of "Story Lessons in Geography" (1) has essayed the work and has succeeded—partly. She has addressed herself to the teacher, whom she encourages with a quoted motto at the beginning of every lesson—"The conditions of conquest are easy"; "We have but to toil awhile, endure awhile, believe always and never turn back." Some teachers may regard these "conditions" of R. L. Stevenson as the reverse of easy; but perhaps it is a matter of opinion. The conditions, at all events, of mastering Miss Hardie's book are not difficult. There are twenty-four lessons; each contains a story, a descriptive lesson on the story, an expression (blackboard drawing, modelling, &c.) lesson, and a short—very short—reading and writing lesson. Some of the headings will show the character of the stories: "The Wind," "In the Days of Bruce," "The Shamrock," "Joan of Arc," "Children of Italy," "Children of Egypt," "Amongst the Sugar-canes." The sketches for blackboard work are, as they should be, extremely simple. The book measures 11 in. by 8¾ in., so that the illustrations are of a size which makes their reproduction the easier. The other parts of the "expression" lesson require very little apparatus beyond a

demonstration tray. It is plain and straightforward, so that a teacher, even though she be ungifted in the matter of story-telling, will have enough material and sufficient example to interest her charges. There is nothing the critic can cavil at, save that there is very little geography.

It is different when one turns over the pages of books which advertise themselves as "practical," "scientific," "systematic," and "descriptive" geographies. He would be an odd, if truthful, author, by the way, who would term his work *un*practical or *un*scientific or *un*systematic! Be that as it may, the teacher of geography is a little inclined to gird at these affirmative adjectives when applied unblushingly as headpieces, or even subsidiary titles, to certain latter-day geographies. The four, however, which we note below endeavour to act up to their titles, and are to be commended for the attempt. Messrs. Miller's book (2) is adapted for "secondary and supplementary schools," whatever the difference between the two types of education may be. Its "practical" nature is of limited extent, and is confined entirely to map-construction and map-reading and methods of determining latitude and longitude. There is not even any reference to the subject of map-projections. The treatment is generally mathematical, and the idea is to co-ordinate it with the instruction generally given in a concurrent science and mathematical course. There is a capital and useful chapter on the reading of an Ordnance Survey map.

Mr. Ellis Heaton's "Asia" (3) is the sixth book—*i.e.*, the last but one—of what is now a well-known series. The continent is first treated generally (Part I.) and afterwards in local detail (Part II.). We like the earlier books better. This is distinctly "dry"; it will do for the teacher, but not so well for the class. It falls, too, a little short of up-to-dateness at times, which is hardly "scientific." Pekin, Kamschatka, and Hoang-ho are not the usually received spellings of to-day. On the subject of Russia's possibilities in Asia, the Tashkent-Orenburg line is indicated on the map as "proposed" only (though the text rightly regards it as already in existence), and no hint is given of the direct communication now between St. Petersburg and the Trans-Siberian Railway. Nor is there any reference to the future importance of the Finland extension, which will join up Narvik (Norway) and its British trade with the same great continental trade-route.

The "Systematic British Isles" (4), by Mr. Webb, is the first volume of a series which is to comprise the world in five books, treated on "modern lines as recommended by the Board of Education"—*i.e.*, up-to-dateness and causal connections. It is a little disconcerting to find included in the "system" the eternal Gulf Stream myth (p. 3), maps without scales and without latitude and longitude, and statistics dating no nearer to-day than the year 1905, except in a few isolated cases where 1906 is cited. Many pages, too, are perilously near to the glorified catalogue style, which we cannot conceive of as recommended by the Board of Education or any other Board. On the other hand, the connection between cause and effect is constantly emphasised, and this is undoubtedly the saving of the whole book. "Facts" in geography, and above all statistical facts, are always getting out-of-date; "causal connections"—with rare exceptions—are permanent.

"By Road and River" (5) lays claim to the title of a "descriptive" geography, and is an interesting book of the "Reader" type—a "drive" here, a "visit" there, and a "tour" elsewhere. For those who like Readers it has many attractive features. The pictures, for example, are good, and include two of Herbert Railton's inimitable etchings, and the various chapters are followed by short exercises and questions which have the rare advantage of being not too difficult. But the maps are poor, and here and there are mistakes which should have been avoided. Luton is not now famous for straw-*plaiting*. That was killed some years ago by, we believe, cheap Chinese labour. The industry now concentrates on working up the imported foreign plait.

Of quite a different type from any of the foregoing books are the so-called "County Geographies" (6) of the Cambridge University Press. "So-called" is not used in any sense of disparagement. As a matter of fact, they are more than geographies, for they comprise chapters on the history, antiquities, and architecture of the county, as well as on its physical geography, geology, natural history, industries, and communications. Every school in the country ought to possess its own particular volume, say, as a Reader, and the whole series should find a place on the school's library shelves. Each book treats its subject after the same method, and is well adorned with numerous pictures and two good maps. There is thus a certain amount of overlapping in the general portions. For instance, the chapter on "Geology and Soil" begins practically word for word the same in all the volumes, though it ends differently as the local application is introduced. That these three volumes in particular are interesting and trustworthy may be inferred from the names of the authors, though, as is natural, Dr. Marr makes more of geology and less of animals, while Mr. Lydekker reverses the process. Specially interesting points are the derivation of Westmorland from *mere* and not *moor*, the caution against exaggerated notions of heavy rainfall in the Lake District, the distribution of fauna in Hertfordshire, and the account of Stonehenge. But there are many more, and not the least among them the expert's selections of adjectives—"terrible and vulgar," "detestable"—wherewith to characterise the cockney accent, which is, alas! beginning to influence the rhythm and melody of the Wiltshire dialect.

SOME INTERESTING SCHOOL BOOKS.

(1) *Old Ballads of England and Scotland.* Selected by R. Armstrong. 203 pp. (Holland.) 1*s.* 6*d.*

(2) *War Songs of Britain.* Selected by H. E. Butler. 239 pp. (Constable.) 2*s.*

(3) *Guy Mannering.* With seventy-four illustrations. 548 pp. (Henry Frowde.) 2*s.*

(4) *Robinson Crusoe.* Macmillan's Pocket Classics. 353 pp. 1*s.*

(5) *The Spanish Military Nun and the Revolt of the Tartars.* Edited by V. H. Collins. 164 pp. (Clarendon Press.) 2*s.*

(6) *Macaulay's History of England, Chapter iii.* Edited by A. L. Bowley. 171 pp.; with two maps. (Clarendon Press.) 2*s.* 6*d.* The same book, without additional notes, 1*s.* *The Third Chapter of Macaulay's England.* Edited by G. D. Salmon. 206 pp. (Longmans.) 1*s.*

(7) *Leigh Hunt. Selections.* Edited by J. H. Lobban. 164 pp. (Cambridge University Press.) 1*s.*

(8) *The Paston Letters: a Selection.* Edited by M. D. Jones. 72 pp. (Cambridge University Press.) 1*s.*

(9) *Browning's Paracelsus.* Edited by M. L. Lee and K. B. Locock. 243 pp. (Methuen.) 3*s.* 6*d.*

(10) *The Story of Milton's "Paradise Lost," narrated for the most Part in the Words of the Poet.* Arranged by G. Carter. 148 pp. (Methuen.) 1*s.* 6*d.*

A PARTICULARLY interesting handful of books awaits a word or two. "Old Ballads" (1) are not so well known,

learnt, or even read in the schools as they should be. They are the intermediate step between junior and senior work, though the full beauty of them is not realised until long years after. Mr. Armstrong's introduction is good: but we look in vain for any reference to the real originals, and we should quarrel with many of his statements. The ballads chosen are in some cases edited; very many ballads are not *virginibus puerisque*. But nobody knows the true text of a ballad. Other songs—"War Songs of Britain" (2)—have for their object the showing forth of the ennobling power of war; "War," said the old Greek, "is the father of all." Consequently, the other side is discreetly hidden under the colours of the Flag. Mr. Butler's arrangement is chronological, and ranges from Boadicea to Ladysmith. Mr. Frowde sends a "Guy Mannering" (3), one of an admirable series, the old-world pictures of which seem to suit Sir Walter better than our modern draughtsmen do. Another good series, little known as yet, we think, is Macmillan's Pocket Classics (4), in which, besides the everlasting "Robinson," you can get (and put easily into your pocket) "Thanatopsis," "Lincoln's Speeches," Jonathan Edwards's "Sermons," and other books not usually published at a shilling. The "Crusoe" before us is edited by C. R. Gaston. And, at last, De Quincey (5) is making his way into schools; but the introduction in this delightful little volume is rather brief. No fewer than three editions of "Macaulay's Third Chapter" (6) are issued, the Clarendon Press copy (*2s. 6d.*) being accompanied by notes of a comparative character, and Messrs. Longmans' edition forming one of the class books of English literature. There is room for all the editions: this chapter would have made any man famous. Leigh Hunt (7), so long merely a name, is now coming into his own; he is best seen, as so many ought to be seen, in an anthology; but, for one or two things, he is immortal; and he was Shelley's friend. "The Old Lady" (contained in this selection) proves him to be of Theophrastus's household. A bolder venture is a small selection from "The Paston Letters" (8). The book wants doing for schools, but in a fuller fashion than this; with a longer introduction, a few facsimiles, some contemporary illustrations, and the original spelling. The romance of the manuscript, too, might be further dwelt on. Another welcome book (but is it for schools?) is Browning's "Paracelsus" (9), admirably edited. The many-sectioned introduction is crammed with matter that raises questions; we choose one statement only—that Plato, Shakespeare, and Browning were mystics and men of action, the rarest combination known—as an example; the editors would evidently like to let themselves go. To find an editor with a personality is very interesting: most of them leave their souls at home. Finally, Mr. G. Carter has tried, and it seems has succeeded, in telling the story of Milton's "Paradise Lost" (10) In the words and in the lines of the poet: and this was wanted, too; for of all authors Milton is, to people under twenty-one, the dullest: and he should not be.

McDougall's Suggestive Lessons in English. Book V. 64 pp. (McDougall.) Paper, *4d.*—This little book belongs to a type now fairly familiar in junior classes; the grammar is as little technical as possible and serves primarily as a basis for composition. Pictures are freely used as an aid for the same subject. The correction of common errors, elementary rules for punctuation, and paraphrasing all find a place. As an exercise book it should be distinctly useful to a teacher able to supplement it by his own oral teaching.

HISTORY AND CURRENT EVENTS.

At the date of writing these notes the General Election is over, and we have just seen the meeting of the new Parliament. What is the constitutional position of the House of Commons? Wherein does it differ from that of its predecessors of (say) the eighteenth century? In those days Edmund Burke told his constituents at Bristol that he was not bound by their views of what was best for the country, and that the members of the House were representatives, not deputies. Now the candidates for a seat announce themselves as advocates of the policy of one or other leading statesman, and they are practically pledged to support one or other of the rival parties. The House of Commons has altogether changed its character. It *was* an independent body, standing between the constituencies and the Ministers. It *is* the mouthpiece of the constituencies—merely a register of their opinions.

In George III.'s reign there were contests between the House of Commons and the newspapers as to the right of the latter to report the speeches in the House, since the constituencies were eager to know the proceedings of their representatives. The privilege was won, and for a century the debates in the House, even if they did not always affect the votes, were regarded as educational. Now the newspapers do not think it worth while to report the debates, the place of those reports being taken by "Pictures in Parliament" and other popular accounts of the proceedings. Interest is centred in the voting rather than in the speeches; and the House has helped towards this by the adoption of the "closure," a method of doing business rapidly at the expense of the debates, which has gone far towards making the House a machine for registering votes. Parliament is no longer, at least in the full sense of the word, a "talking apparatus." Its votes are often recorded in silence.

What are the reasons for this change? What have been the causes of this alteration in the constitution? We may place first the growth of the party system and of the Cabinet. Beginning in the latter part of the seventeenth century, and established firmly with the accession of the Hanoverian dynasty, they survived the endeavour of George III. to replace them by "patriotic" government, and, with the passing of the Reform Acts of 1832, the kingship finally retired before them. The Cabinet, and especially the Premier, now governs the country and dictates its policy. Secondly, the increase of the electorate until we now have practically manhood suffrage, together with the growth of the newspaper Press rendered possible by easy means of communication, has brought the constituencies into closer relation with the Cabinet and the Premier, and has thus tended to eliminate the House of Commons as a middleman between them. It is as if the selection of the Premier was effected at one stage instead of two.

We have not gone quite so far in this respect as our cousins of the United States of America. In that country the people at large choose the President, who corresponds nearly to our Premier, by a double election. But whereas the framers of that constitution in 1789 intended the "electors" to be men of worth, with a free choice of a President, those "electors" are now mere nobodies pledged beforehand to vote for one or other of the candidates nominated at the conventions of the various parties. Members of our English House of Commons have other functions to fulfil—work on committees and such like—which prevents them from being the mere delegates that

the "electors" in an American Presidential election have become. But on the great legislative proposals which the Cabinet brings forward there are "whips" to see that the voting goes on party lines. Woe to the member who kicks against the pricks of the party system!

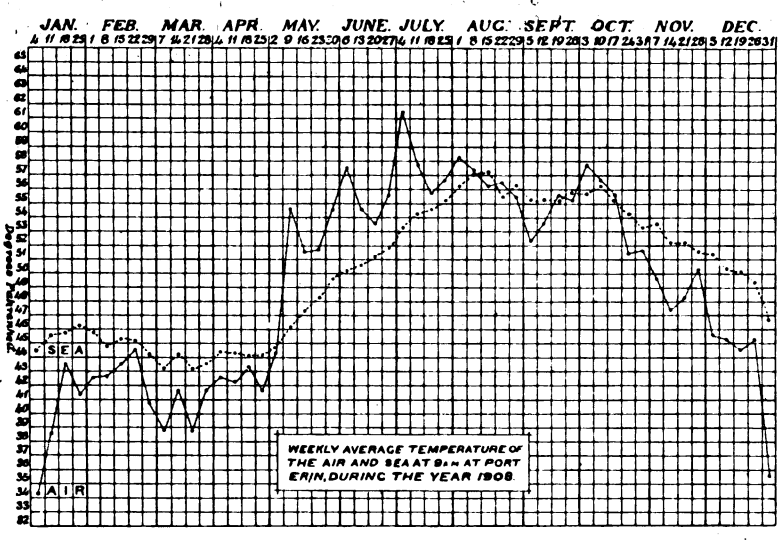
ITEMS OF INTEREST

GENERAL.

DR. H. A. MIERS, F.R.S., principal of the University of London, has been elected president of the Educational Science Section of the British Association for its meeting in Sheffield next August.

THE Board of Education desires it to be known that the space available for the exhibition of national competition works will unavoidably be much more restricted this year than hitherto. It is desirable, therefore, that the number of works sent up by schools of art should be limited as far as possible.

AT the autumn meeting of the London Branch of the Association of Assistant-mistresses it was decided to form a science section for the purpose of discussing matters bearing on the teaching of science. Any mistresses interested in the teaching of science and wishing to join the section must first become members of the London Branch of the association. Further particulars may be obtained from Miss Macdonnell, North London Collegiate School, London.



THE concluding lecture for this term on methods of geographical instruction, arranged in connection with the Geographical Association, will be held on March 18th, at 7.45 p.m., at the North London Collegiate School, Sandall Road, London, N.W. The lecture will be given by Mr. C. J. Grist, headmaster of the Tiffins' Boys' School, Kingston-on-Thames, on photography as an aid to the teacher of geography. The chair will be taken by Mrs. Bryant, and the new geographical laboratory of the school will be open for the inspection of teachers.

THE University of Cambridge Extension Summer Meeting is to be held this year at York. The meeting will be divided into two parts: Part I. from July 22nd to August 4th inclusive; Part II. from August 4th to August 17th. The inaugural lecture will be delivered by the Archbishop of York.

A VACATION course will be held at the School of Geography in the University of Oxford from August 8th to 25th next. 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 geography of the British Isles and Empire. Courses of practical work will be planned both for those who have not done any before and for those with some experience. The former will consist of at least four demonstrations in the field and six 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, especially for practical classes, names should be sent in as soon as possible to the secretary, Vacation Course, School of Geography, Oxford.

THE twenty-third annual report (62 pp., 1s. 6d.) of the Liverpool Marine Biological Committee gives gratifying evidence of the good work which is being done at the Marine Biological Station at Port Erin. Prof. Herdman contributes an important article on "Our Food from the Sea," and the report also contains several other accounts of interesting investigations carried out at the biological station during the year. We reproduce a diagram showing the result of the temperature observations taken at the station during 1908, the last complete year. The curves show very clearly how the temperature of the sea (dotted) lags behind that of the air (whole lines), being higher in winter and lower in the height of summer. Many of our readers will be interested to know of the vacation courses in marine natural history which are held at the station. During the last three or four years the courses have been attended by large numbers of teachers-in-training, who have had the advantage of working under competent guidance and within easy reach of abundance of living material.

THE last annual report of the London County Council, which deals with the work of the year ending March 31st last, gives a summary of the Council's educational work of the year. We notice there are in London forty public schools not aided or maintained by the Council, of which about twenty-four are first-grade schools. The remaining sixteen schools provide in the main for the lower branches of business and commerce. A certain number of pupils attending both kinds of schools who intend to become teachers in elementary schools will remain until the age of seventeen, and after a year of practice in an elementary school will proceed to a training college. Fourteen of these schools—viz., eleven belonging to the Girls' Public Day School Trust and three belonging to Church School companies—are supported by fees and Board of Education grants only, and are not possessed of endowments; nine schools are maintained by religious communities belonging to the Roman Catholic Church, and are for the most part in receipt of Board of Education grants; a few of the remaining schools are maintained by fees of pupils only, but the majority either possess endowments or are in receipt of Board of Education grants, or have both these sources of income. There are fifty secondary schools in

London aided by the Council. The Council's grants are paid partly with the view of enabling the schools to accommodate a larger number of pupils than would otherwise be possible, and partly with the view of increasing the efficiency of the work. The total grant for the year 1908–9 was £77,575, of which £40,314 was estimated to be due to the schools as fees in respect of the attendance of the Council's scholars, and about £37,261 was maintenance grant in addition to such fees. The remaining sources of income of these schools were estimated to be as follows: endowment, &c., £52,500; fees (other than those of Council's scholars), £74,000; Government grants, £49,800.

Teachers in elementary schools are not yet satisfied with the conditions under which they work. They have recently issued as a leaflet a warning to parents, directing attention to the risks of entering the teaching profession. The would-be teacher must remain in a secondary school until the age of sixteen, must work for two years as a pupil teacher, or for one as a bursar followed by one as a student teacher, and must enter a training college for two or three years. During this time he will be more or less of a charge upon his parents. He may be refused as a teacher on account of defective health, unsatisfactory work, or other causes over which his parents have no control. A further complaint is that of 4,384 teachers who left the training colleges in July, 1908, 1,226 were without employment in October, 3,000 in three months, surely not a slow rate of absorption. The costly training against which parents are warned—costly, not to the parents, for they have to contribute only towards the maintenance of their children and not to maintain them, but to the Government which provides the training and contributes towards the maintenance—does not carry with it a guarantee of employment. The Government requires the would-be teacher to enter into a bond to serve for a term of years as a teacher, or, if he obtains other employment, to refund the amount expended by the State on his training.

These conditions do not appear altogether unreasonable to an onlooker; indeed, they are much more favourable than could be obtained from many a private employer. There is, however, one grievance which, though not considered worthy of heavy type in the leaflet, as is the rate of absorption, appears more real than any of the foregoing hardships: although there are a number of certificated teachers without employment, the Board of Education permits the employment of young teachers with no educational qualifications. The lot of the certificated teacher has improved, as is clearly shown by Circular 739, issued by the Board of Education. In the year 1902–3 the average salary of certificated men teachers was £131 13s.; in the year 1907–8 it was £143 15s. 4d. Consequently, the rate of contribution to the Deferred Annuity Fund is to be £3 10s. after April 1st, 1910, instead of £3 5s., as it has been since 1903. There will be, of course, a corresponding increase in the annuities payable out of the fund.

An experiment of considerable interest is being made in Dortmund, where a training college for "Technical Mistresses" has been opened. Hitherto it has been customary in Germany to employ special mistresses to teach drawing, sewing, housekeeping, and gymnastics. The teachers have qualified for their work by attending training courses in single subjects. Now the four subjects have much in common: didactics and pedagogics are part of each course; drawing combines readily with dress-cutting; and there are many minor cases of overlapping. Hence it is believed that a complete course, embracing all four subjects, can be organised with no greatly increased demand of time or money from those attending it. The first step at Dortmund was to make the possession of the leaving certificate of the Girls' High School a condition of admission. This measure assured a supply of better candidates. Then the programme of the Girls' High School was modified so that a preliminary course was provided in the senior classes. By thus emphasising the value of the Arbeitsklassen, an advantage was conferred on the school, where, as is usual to-day, pens, paper, and printers' ink receive too much attention, with the result that social dilettantism and theoretical accomplishments are more popular than the work and classes of the technical side. It is well that women's work proper should receive encouragement, and that the nation should not be misled by rapidly growing prosperity.

Conspicuous advantages are claimed for the new Dortmund scheme by its advocates. In the first place, it is more economical. To maintain one school with a uniform course is cheaper than maintaining four schools with separate staffs and separate curricula. Then the public schools will benefit, since it will be easier to organise them when all four branches of domestic technology can be assigned to one mistress. Finally, the teacher will benefit; her interests will be widened, and she will be less exposed to the humdrum existence of a narrow-minded specialist in a mechanical subject. So far the movement has met with success. Students are willing to accept the extra demands made on them—the course lasts three years, with a week of thirty-two hours—although several belong to well-to-do families and will never use the diploma they seek to gain. Moreover, a number of unattached students have applied for admission to single classes of the course in order to gain experience which will be useful in after life. The experiment has attracted attention in South Germany, where methods and views differ greatly from North German ideals, and it promises to receive further trial at no distant date.

La Ligue de l'Education Familiale was founded in 1899, with the co-operation of the Belgian Government, to secure closer association between parents and teachers in the study and practice of educational methods. A strong committee has been organised to bring to the attention of the British public the third International Congress, to be held in connection with the Brussels Exhibition, August 21st to 25th next. The Marquess of Londonderry has accepted the presidency of the committee. The necessity for intimate association of home and school influences if we are to obtain moral, mental, and physical efficiency in education is becoming increasingly recognised. It is therefore earnestly desired that parents and teachers will take the fullest advantage of such an interchange of opinion as is offered by this congress, which is an international demonstration in recognition of the fact of the large share that is played by the parents and the home in the work of education when that is understood in the fullest sense of the word. Full information can be obtained from Miss Kyle, Highbury Hill, Highbury, London, N.

The class-lists of the Cambridge Local examinations show that the total number of candidates entered for the examinations held in December last was 11,549, exclusive of 3,160 candidates examined at colonial centres. In the senior examination 902 boys and 1,092 girls passed, 95 boys and 14 girls being placed in the first class. Sufficient merit was shown by 487 boys and 200 girls to entitle them to exemption from one or both parts of the Previous examination. Of the junior candidates, 2,052 boys and 1,383 girls passed, the numbers placed in the first class

being 181 and 26 respectively. In the Preliminary examination 1,412 boys and 908 girls satisfied the examiners.

THE January issue of *Child Study*, the journal of the Child Study Society, is unusually full of interesting matter. Prof. Lloyd Morgan writes with his customary clearness and charm on "Normal Development from the Psychological Point of View." Dr. Slaughter, a well-known disciple of that enthusiastic student of children, President Stanley Hall, has some good things to say about the growth of imagination in children; yet it seems a pity to employ that word for the uncontrolled play of ideas which is often as futile as it is charming in child life; and, by the way, why do not child students record the futilities? Some improvement in procedure would, we think, give a truer view of the nature of the child mind. Then there is an abridged account of a research on mental fatigue, by Dr. Abelson, who found the æsthesiometer a trustworthy method of approach to this highly complicated problem. We are sorry that he has cut out the greater number of the actual results he obtained, as he leaves us with insufficient evidence in support of the conclusions arrived at by means of this much-discussed method.

School Science and Mathematics (vol. x., No. 2) contains the latter portion of a most interesting paper, by Mr. W. E. Stark, on "Measuring Instruments of Long Ago." The information is derived largely from books on practical geometry published in the sixteenth and seventeenth centuries, and now in the private collection of Prof. D. E. Smith, of Columbia University. The article is rendered doubly interesting by the large number of excellent reproductions of engravings which illustrate the original volumes. Teachers in search of practical problems which will help to give interest and significance to school work in algebra and geometry are advised to read this contribution to the history of applied mathematics. The first portion of the paper appeared in the previous number of the same publication. Both numbers contain articles on other matters which deserve the attention of teachers both of pure and applied mathematics and of biology.

THERE exists a tendency among teachers of geography to resort to the official publications of the various Governments for information as to the facts of geography. The Republics of South America publish such records in a foreign tongue, and therefore British teachers should make efforts to secure a copy of the *Times* for December 28th, 1909, in which there are sixty-two pages of condensed information as to these independent republics. The facts given are, for all practical purposes, official, and include information about the people, the industries, and the railways, in addition to maps and pictures. From the tables it will appear, for example, that in Argentina the area devoted to wheat has been practically trebled since 1895, while the areas devoted to flax, oats, alfalfa, and the vine have been increased at a greater rate within the same period. The geography of Paraguay is given in detail and excellently illustrated, and the conditions of life elsewhere receive adequate treatment. Although the issue is out of print, teachers would be well advised to attempt to secure a copy.

THE unrest which is felt in regard to the teaching of geography is responsible for an article in the November issue of the Columbia University *Journal of Geography*, entitled "The Teaching of Geography—A Criticism and a Suggestion." The author maintains that "the attitude of superiority to text-books is hardly less bad than slavery to text-books." Particulars as to a test applied to about seventy-five students, most of whom were in the early years of their college courses, are given. The results bear out the contention that American pupils leave the schools with a conspicuous lack of knowledge as to where and what things are. One example from the replies may be quoted: "Manitoba is the capital of British Columbia." The article insists that the time spent in making plans for work in geography is disproportionately large, as compared with the time spent in acquiring information. The teacher who has not made a special study of geography will do better to follow a text-book than to strike out plans of his own in a subject with which he is not intimately familiar. Two questions for the consideration of teachers of geography are propounded. Would not a larger use of text-books and maps give better results? Would it not be better to give relatively more time to enriching, illuminating, and adapting the substance of the text-book, and in seeing that it is comprehended, and relatively less time to the elaboration of plans which involve the omission or slight use of text-books?

A JOINT conference of members of the Geographical Association and of the Federated Associations of London Non-Primary Teachers will be held at 3 p.m. on Saturday, March 12th, at the Polytechnic, Regent Street, W. An address will be given by Mr. H. J. Mackinder, M.P., on "The Regional Method in Geography"; the address will be followed by a discussion. Tickets may be obtained from the hon. sec. of the Federated Associations, Miss R. F. Shove, 26, Blessington Road, Lee, S.E.

IN the paragraph on the salaries of assistant-masters published on p. 70 of our last issue, the sentence reading "The status of teachers is least in Germany, Austria, and Sweden," should have read "The difficulty of estimating the status of teachers is least in Germany, Austria, and Sweden."

SCOTTISH.

PROF. LODGE, in the course of an address to the Secondary Education Association (Edinburgh Branch), said that history is perhaps the most essential subject for the education of our future citizens. All the great political problems of the day can be understood adequately only by having regard to their historical setting. It is said that the history taught in school is of no use to the average voter. He would be very sorry to accept any such view. School history is the only real history the great mass of the population will ever know. Their political judgments must be based on what they acquire at school, fragmentary as it may be, or on what they obtain from the newspapers through the writings of professed partisans. Referring to the question of what sort of history should be taught, Prof. Lodge held that the history of one's own country must receive the first place. Scottish history naturally claims a prominent place in Scottish schools, but not to the exclusion of a study of British and general history. On the other hand, Scottish history is entitled to a far more important position than it holds in English schools. In the teaching of history, text-book instruction and oral instruction are both absolutely necessary, neither being adequate alone.

MR. GEORGE FENTON, president of the Educational Institute of Scotland, in addressing a meeting of teachers in Edinburgh, offered some acute and timely criticism of present-day methods of inspection in elementary schools. The complete abandonment of individual examination has resulted, he declared, in a looseness, an incoherence, and an indefiniteness of aim and purpose in the whole school

work. Strong support for Mr. Fenton's criticism is forthcoming from the headmasters of secondary schools. They declare that the qualifying examination of the elementary schools, which is also the passport into secondary schools, is utterly useless as a test of fitness for entering upon higher studies. An increasing number of pupils are coming up year by year with the imprimatur of the elementary school upon them who are educationally unfit or immature. Certain School Boards, indeed, have gone the length of setting up a supplementary examination for all wishing to attain entrance to secondary schools. Many morals might be drawn from this unfortunate position of things, but the most obvious and pressing is the need for the reintroduction of some modified form of individual examination at definite stages in the school career.

Lord Rosebery, in the course of a visit to the Edinburgh Merchant Company Schools, inspected the Cadet Corps, and highly complimented the boys on the smart manner in which they went through their movements. He told them that a healthy mind in a healthy body is in large measure the secret of success both in school and in after life. This can only be had by working both mind and body, not by shuffling and scamping either at sports or work, but by throwing the best heart and best energy into all that is done. Subsequently, at a luncheon given in his honour in the Merchant Hall, Lord Rosebery praised the practical character of the instruction now being given in the schools, and contrasted the attractiveness of the teaching methods employed with those he experienced in his youth. On two matters of detail, however, he ventured to offer a word of criticism. The boys do not articulate their words distinctly, and do not carry themselves sufficiently erect. In both respects he thought they of an older generation bore off the palm.

Prof. Burnet, St. Andrews, if he had his way, would add considerably to the burdens of the poor secondary-school pupil. He would have him taught physical and natural science, and is of opinion that a good deal more may be made of astronomy as a school subject. No one, he declared, should be allowed to study science in the universities without passing a preliminary examination in these subjects. The professor would further like the science student to possess a working knowledge of Latin, Greek, and French. Latin he demands, because it would prevent the student from memorising unmeaning vocables in an unknown tongue. The fact that it is impossible to do any original work in science without a knowledge of French and German is, he held, sufficient to justify the demand for a knowledge of those subjects. While he is a strong supporter of studying certain subjects on a thoroughly intensive basis, it is quite possible, he holds, to give recognition to more superficial work done in other subjects, mainly with a utilitarian purpose. This educational gospel appears on first consideration to be highly heretical, yet, rightly considered, it may be found to have as much to say for itself as other so-called heresies.

In the eighth annual report the executive committee of the Carnegie Trust gives a brief summary of the year's operations. One of the most important departments of the Trust's activities is the encouragement of post-graduate research by means of fellowships, scholarships, and special grants. The amount of valuable work achieved in this way shows a steady advance every year; the expenditure last year upon research work was £8,853. Grateful acknowledgment is made of the interest taken by the university authorities in the scheme, and of the assistance rendered by them in the selection of suitable candidates and in guiding and supervising their researches in the laboratories. Statistics of the payment of ordinary class fees for the past year give the total number of beneficiaries as 3,553, the total amount of fees paid as £47,070 18*s.*, and the average sum paid per beneficiary as £13 4*s.* 11*d.* Compared with the previous year, this represents an increase of 284 in the number of beneficiaries, of £3,814 16*s.* 8*d.* in the total expenditure, and of 3*d.* in the average amount per beneficiary. During the year the sum of £257 10*s.* 6*d.* was voluntarily refunded by eleven former students who had enjoyed the benefits of the Trust.

Edinburgh Provincial Committee has taken the first step towards providing new central training college buildings. A site has been purchased adjoining the present training college at a cost of £10,850, and building operations are to commence forthwith.

In consequence of the retirement of Mr. George Todd, Dr. George Macdonald has been appointed First Assistant Secretary of the Scotch Education Department, taking charge, as hitherto, of the office in Edinburgh. Mr. G. W. Alexander, at present clerk to the School Board of Edinburgh, has been appointed Second Assistant Secretary, taking up duty in London.

IRISH.

It is announced that the number of students who have given notice of their intention to present themselves for examination under the Intermediate Education Board next June is the largest since the establishment of the system. The number of boys is 8,678 and of girls 4,414, making a total of 13,092. This is an increase over last year of 280 boys and 311 girls, or 591 in all. The previous highest total was in 1907, when it was 12,549.

In addition to his Grace Dr. Walsh, the Archbishop of Dublin, whose resignation was recorded last month, Dr. B. C. A. Windle, president of University College, Cork, has also resigned his seat on the Intermediate Board. Dr. Walsh's place has been filled by the appointment of the Most Rev. J. Tohill, Roman Catholic Bishop of Down and Connor. Mr. T. P. Gill, of the Department of Agriculture and Technical Instruction, has been appointed in place of Dr. Windle, whose resignation is due to want of time owing to the important work of organising the University College, Cork, and the new National University.

The Classical Association of Ireland held its third annual meetings this year—for the first time—in Belfast. The president for 1910, Sir S. Dill, professor of Greek in the Queen's University, Belfast, and Commissioner of Intermediate Education, delivered his inaugural address on February 4th. The subject was "The Place of Greek in European Culture and Modern Education." The attendance was very large, and the meeting was a great success. The address divided itself into two parts. The first dealt with the position of Greek in education, and especially in Irish education at the present time. While the existence of classics in large numbers of schools is at stake, said Prof. Dill, they are discussing the age for beginning Latin and Greek, the number of hours to be given to them, the relation of translation and composition, and the remodelling of examinations. The real question, however, is whether competitive examinations are not the real cause of most of their difficulties, and whether, if they were reduced to their proper place, the able headmaster would not be able, if left free, to solve these problems in practice. The classical tradition in schools is threatened, and Greek is being condemned as "useless." No one wishes to impose

its study on boys whose school life is short or who show no aptitude for such study, but for other boys and university students it is impossible to separate the study of Greek from that of Latin. It is sometimes urged that Greek can be studied in translations; but to do this is to sacrifice the peculiar charm and subtle essence of its literary art. The higher scholarship and philology, the study of the literature and mental history of the Roman race, are hardly possible without a competent command of Greek literature, and the day when the teachers of Latin know Latin only will see the end of real Latin scholarship and of any thorough comprehension of classical antiquity as a whole.

THE second part of the address was a brief survey of the history of the influence of Greek culture on Europe, a *résumé* of the different periods when Greek had revivified Europe, commencing from Roman times and the second century A.D. of Plutarch and Lucian, and including the work of the Irish monks in preserving the literature of Greece in western Europe, and tracing the course of the Renaissance in southern Europe. It concluded with a sketch of Greek scholarship in England, dwelling upon those glories of eighteenth-century England, Bentley, Porson, Elmsley, and Dobree, and upon what Mr. Butcher has called the Renaissance of Greek in England during the past forty years. The meeting was also addressed by the Protestant and Roman Catholic Bishops of Down, by Dr. Hamilton, the Vice-Chancellor, and by Mr. T. G. Houston, of Coleraine Academical Institution.

THE annual meeting of the members of the association was held on February 5th, when the report of the council for 1909 was passed and officers and members of the council were elected. The most interesting features of the report are an account of the educational conference held last June and a statement of the establishment of co-operation between the Classical Association and the College Classical Societies of Trinity College, Dublin, of Queen's University, Belfast, and of University College, Dublin. These societies will have representation on the association's council, and will in return invite the members of the association to one of their meetings every year. The president for next year will be Dr. Starkie, editor of Aristophanes' "Acharnians," Resident Commissioner of National Education and Commissioner of Intermediate Education.

THE Department has issued the second number of vol. x. of its *Journal*. It is almost entirely concerned with agricultural topics—horse-breeding, potato diseases, eggs, tobacco growing, flax experiments, field experiments, cereals, manures, &c.—of great importance for Irish farmers. It also contains the vice-president's address, which again deals almost altogether with agriculture. The article on "Summer Courses of Instruction for Teachers," by Mr. Fletcher, the assistant secretary, which appeared in vol. x., No. 1, has been reprinted as a separate pamphlet for distribution in schools and elsewhere. It is fully illustrated, and sets forth the Department's policy in inaugurating and continuing these courses. The Department also announces that scholarships in agriculture, horticulture, forestry, and creamery management will be offered this summer for men. The examination will be held in Dublin on August 17th–19th. Particulars can be had on application to the secretary.

WELSH.

THE Education Committee of Denbighshire, through its chairman, has reported on the progress of the schools for the last three years. There has been an increase of fifteen provided schools and a decrease of five non-provided schools. The accommodation stands in provided schools at 16,987; in non-provided schools at 10,232. Children under five years of age are now excluded from the schools. There is an increase in the number of pupils in the county schools, and a tendency for children to leave the elementary schools at an earlier age than formerly and to continue their education in the evening schools. The average attendance in the elementary schools of the county is now 20,490 (89 per cent.). In 1907 there were 661 teachers; now there are 777. Of this number forty are student teachers, but the number of certificated teachers has increased from 273 to 291. In the County Intermediate Schools in 1906 the number of pupils was 825; it is now 1,030.

AT a meeting of the Colwyn Bay Education Committee, a request was made from a girls' school for a sewing machine—the first application of the kind. One of the members remarked that the committee must draw the line somewhere, but another member remarked that the request was reasonable, and asked, if secondary schools have pianos, why should not the elementary girls' schools have sewing machines? The committee decided to grant the request. It had next to consider a request for a doll's house for an infants' school. The necessity for this was doubted, but eventually it was left to local members to decide. The question then arose whether foundation managers of non-provided schools have authority to grant leave of absence to the teachers in their schools. The question was referred to the County Education Authority.

AT the last Council meeting of the University College of North Wales, Bangor, there was received a copy of the Treasury minute as to the allocation and payment of the additional Government grant of £4,000. The Treasury stipulates that the grant shall not be used for the provision of undergraduate scholarships, which must be a charge upon other funds of the college, and in particular on private benefactions or grants from local authorities. Further, the grant must not be used to provide new departments in the college. For the establishment of new subjects, provision must be made by the collection of funds by the college authorities, the grant clearly being intended for the development of the work which the college has already in hand.

THE case of the Oxford Street, Swansea, National Schools was brought into great prominence, and it is well known that no thanks are due to the Swansea Education Authority that the teachers' salaries have been kept up to the level of the teachers in the provided schools. The managers have made great efforts also to improve the buildings, so as to bring them within the requirements of the Board of Education. This has been done at an expenditure of £20,819, which includes, as the report puts it, £1,039 "balance of money advanced for teachers' salaries which should have been repaid by the local education authority." At the opening, Sir John Llewelyn said that many of the supporters of the school were determined, whatever the cost, to have the schools in a thoroughly up-to-date condition. This readiness to make the school buildings excellent, and to prevent the teachers suffering from the action of the local authority, is the best possible answer, and will be sure in the long run to win the goodwill of the citizens.

THERE is a strong protest being made against the new Intermediate Education Scheme of the Carnarvonshire County Council. By this scheme it is proposed that tuition

fees are not to exceed £5 per annum for each scholar. It appears that the well-known Bangor Friars' School, with an endowment of £800 a year, after some opposition came under the authority. The governors had to hand over £2,000 from capital funds for a County Girls' School at Bangor, and then were required to spend £11,000 on their own school. The fees at the Friars' School are relatively high compared with the other county schools, but the type of work done is such as is necessarily costly. Should this amended scheme be put into operation, it will mean that all the schools of the county will be of one uniform standard, and the old traditions of the famous Elizabethan Friars' School at Bangor will be brought into line with every other intermediate school. The time will probably come when it will be recognised that one strong, well-staffed, well-equipped, essentially classical school in a county will not only be tolerated, but will be regarded as a highly appreciated county, as well as national, educational asset.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Textes et Questions. By W. M. Poole and E. L. Lassimonne. vi+101 pp. (Murray.) 1*s.* 6*d.*—On the left-hand page an anecdote or episode, on the opposite page questions (all in French) on the subject-matter, word formation, applied grammar, in the most approved reform method style. It is a very good little book indeed, and will be welcomed by the reform teacher. There is plenty of variety in the exercises, and pupils who have worked through them will have added materially to their power of handling French. The printing is clear and careful; slips are rare. We have noted *des colliers-ci*, v. 8; *adoucit* (for *adoucir*), xxi. 9; *servait* for *servant*, xxiii. 14; *que* for *qui*, p. 72, l. 10. Sometimes the directions are hardly explicit enough; *e.g.*, "Mettez au subjonctif: pour savoir; exprimez 'auprès de' au moyen d'un substantif; exprimez en un seul mot: *chaque* menu." The reform teacher will probably object to such a question as "Tous les noms d'hommes sont du masculin excepté . . ."; there are, however, very few of this type.

Marivaux, Le Jeu de l'Amour et du Hasard. Edited by E. Pellissier. xv+131 pp. (Macmillan.) 2*s.*—There are few eighteenth-century French plays suitable for school use, and we are grateful to Mr. Siepmann for having added this charming play to his series. Marivaux is too little known; and the term *marivaudage* is contemptuously used by many who have never read the works of this unique author, and unintelligently echo Voltaire's adverse criticism. In a few pages Mr. Pellissier gives the main facts about Marivaux; this introduction might well have been expanded. The notes, on the other hand, strike us as too full, mainly on account of the inclusion of much that deals with elementary grammar, and that must surely be quite familiar to any student who is set to read the play. The short summary of the chief grammatical peculiarities occurring in the text is useful. The appendices usual in Mr. Siepmann's series follow; to use Marivaux's dainty play for such purposes seems like dissecting a butterfly. Some of the sentences for retranslation sound rather unnatural—*e.g.*, "The stranger was standing aloof near the window; and now talk soft nonsense to me, if you dare; I will obey your orders with more joy than I have ever felt." The passages for translation are in part translations from French critics; it might have been better to add them, in their original form, to the introduction. A welcome addition is the section containing subjects for free composition.

German Composition. By Paul R. Pope. x+205 pp. (Bell.) 3*s.* 6*d.*—This is a volume of Holt's Modern Language Series, and is printed in America; hence *endeavor*, *favor*, &c. Dr. Pope is assistant professor of German in Cornell University. "Part first" (why not first part?) consists of a trip from U.S.A. to Germany, which makes it more suitable for our Transatlantic cousins than for us. The German narrative, with German questions on the text, is faced by an English text based on it and furnished with abundant notes. Perhaps it would be safer to say "an American text," for we do not talk about checking baggage, single-trip-tickets, nor say: "The train pulled out," or "the ship was large and mighty," or "he told us that we might make the best of it with them." This narrative is followed by some letters. The second part consists of tales and legends, treated in the same way, except that there are no questions on the text, and that the German narrative soon disappears altogether. In spite of the title, "Paraphrases of Poems," only one poem is given for this purpose. The third part deals with German life and customs. We are given facts about the Empire, the universities, &c. Incidentally, we make the acquaintance of some elegant Americanisms: "Müller will surely flunk in mathematics; on the train we prëempted two adjoining compartments for ourselves." Dr. Pope has also supplied grammatical notes and German-English and English-German vocabularies. He naïvely suggests in the preface that the latter should be used as little as possible; American boys must be very different from English boys if this vocabulary has not the usual effect of preventing effort on the part of the learner. On the whole, we have no use for this book in England.

J. Lemaître, Contes extraits de Myrrha. Edited by E. Rivillé-Rensch. iv+110 pp. (Heath.) 1*s.* 3*d.*—These seven short stories by the admirable master of French prose have, we believe, not been previously edited for schools; and they form a welcome addition to our available reading material. The stories are a sheer delight, and require hardly any annotation. To sixty-eight pages of text the editor has supplied six pages of notes, including some that are clearly superfluous (*e.g.*, "avait quinze ans, was fifteen years old"). We have tested the vocabulary, and it appears to be complete. An excellent picture of Jules Lemaître forms the frontispiece.

W. H. Riehl, Der Fluch der Schönheit. Edited by A. N. Leonard. xiv+137 pp. (Ginn.) 2*s.*—This interesting and rather sad tale has, we believe, not before been edited for schools. Prof. Leonard supplies it with a biographical sketch of the author, a note on the "historical background," notes (which are quite adequate), exercises in conversation (*i.e.*, a *questionnaire*, not going beyond p. 37 of the text), exercises in composition (*i.e.*, retranslation, also not beyond p. 37), and a vocabulary, which is complete.

Heath's Modern Language Series. Selections from Don Quijote. By J. D. M. Ford. ix+88 pp.; notes and vocabulary, 107. (Heath.) 2*s.* 6*d.*—It is said that Louis XIV. one day asked a gentleman of his Court whether he spoke Spanish. "No, Sire," replied the courtier, who read in his master's question a hint hiding great possibilities; "I do not know Spanish, but I shall, to-day, begin a study of the language." He set to work with great eagerness, and in a very short time had acquired a knowledge of Spanish sufficient, he thought, to fit him for the post of Ambassador to Spain. Seizing an opportunity,

he informed the King of his newly acquired accomplishment. "Excellent!" exclaimed Louis. "You can now read 'Don Quijote' in the original." The story does not say if the courtier followed up the King's second suggestion as readily as the first. If he did, he soon forgot his disappointment and found something better than a king's favour. Anyone may read "Don Quijote" in translation. There are, it appears, more than 700 editions of the book in European languages other than Spanish. The English editions alone amount to more than 300; but the best of these, including even Fitzmaurice-Kelly's admirable edition of Ormsby's version, cannot fascinate the reader as the original does—and for no other reason but that English is not Spanish. Had the book first been written in English, and then put into Spanish by a master-hand, the translation would in all probability take the first place. This really happened when Isla translated Le Sage's "Gil Blas." The "Selections from Don Quijote" will no doubt induce many to make the acquaintance of the great Spanish classic. An introduction through Prof. Ford is almost bound to lead to friendship. Students will find in these "Selections" a text above reproach, a complete vocabulary, and as excellent a set of notes as they could possibly desire.

Classics.

A Greek Boy at Home. By Dr. W. H. D. Rouse. viii+134+(separate vocabulary) 48 pp. (Blackie.) 3*s.* 6*d.* net.—This is an elementary reading book, well illustrated, containing a story written in Greek about a boy named Thrasymachus, who lived out in the country in Greece. The story is in sections, subdivided so that each will form a convenient single lesson. The sections deal with such subjects as the garden, the house, the sky, a philosopher, demes, farmers, carriage, walls, ships, battles, seasons. In this way much ground is covered, and in simple and easy language the beginner is helped to acquire a good vocabulary and many Greek ideas. The material of the story is gathered out of all manner of authors, from Homer and Hesiod down to Aristotle and Aesop, the words not being altered, but the syntax and accidence being brought into conformity with Attic. The book is meant to be read aloud and explained in class, the new words being explained by the master, and the reading is intended to be accompanied by reproduction in various ways. The vocabulary, which is separate from the reading book, is not intended to be used at first by the boy, and, except in the case of a few words, it is entirely in Greek, difficult Greek words being explained by more simple ones.

The Year's Work in Classical Studies, 1909. Edited for the Council of the Classical Association by Dr. W. H. D. Rouse. 176 pp. (Murray.) 2*s.* 6*d.* net.—This is the fourth year of issue of "The Year's Work." It is in itself a proof of what Dr. Butcher has called the modern Renaissance of Greek, and also a very valuable reference book for the busy classical teacher or student. The whole field of classical learning is practically covered—methods of teaching, excavations, archæology, sculpture, coinage, religion, mythology, inscriptions, history, grammar, textual criticism, papyri, Greek ancient, hellenistic, and modern. We have, in fact, here in a brief compass a handbook of contemporary study. In whatever department a student may be interested, he will find what is being done and copious references for his guidance. The most interesting things of the year (which, by the way, is from September 30th, 1908, to September 30th, 1909) seem to be the discovery of large numbers of Greek and Roman inscriptions, one especially important for Roman history being of the year 90 B.C., the publication of Stahl's "Kritisch-historische Syntax des Griechischen Verbums," and the finding of a papyrus with 300 complete lines of a new Greek tragedy, Euripides' "Hypsipyle." There is a long section on Roman Britain showing what great interest is being taken in the scientific explorations of Romano-British remains all over the island.

Latin of the Empire, for Use in Schools and Colleges. By W. K. Gillies and A. R. Cumming. With an Introduction by J. S. Phillimore. xviii+326 pp. (Bell.) 4*s.* 6*d.*—A welcome is due to this book as likely to widen the horizon of the young reader. We regret, however, that the book was not confined to those Silver writers that are not now read. Lucan may be admitted, perhaps; but why give 22 pages to Martial and 17 to Juvenal, 24 to Pliny the Younger and 35 to Tacitus? It is true they belong to this age: but the compilers had better be practical than pedantic. Most teachers and many readers will be grateful for a selection from authors whose general work is dull. The following are those chosen: in verse, Seneca, Statius, Ausonius, Claudian, Prudentius, Rutilius, Tiberianus, St. Ambrose, Boethius, with the "Pervigilium Veneris"; in prose, Celsus, Seneca, Petronius, Quintilian, Suetonius, Fronto, Apuleius, Minucius Felix, Tertullian, Lactantius, Ammianus, Augustine. Brief and useful notes are added. The book is well printed.

First Latin Lessons. **By C. M. Dix. x+268 pp.** (Rivingtons.) 2*s.*—This book contains seventy lessons: the portions of text being placed together, and then portions of grammar corresponding to each, with English exercises for translation into Latin, vocabularies, a Latin-English word-list, and a summary of accidence and syntax. All vowels long by nature are so marked. The text lessons are partly made up *ad hoc*, partly *colloquia*, partly passages from Latin authors, such as Livy, Virgil, Horace. The merits of the book are obvious: the learner begins with complete sentences at once, and he can be led up to the rules after use; or, if teachers prefer, they may give the rules first. The text is not very lively, we must admit. It suffers from a lack of unity. It begins with a paragraph in the now familiar style: "Incola sum Britanniae," and so forth; but almost immediately Britain is left for fabledom, and we have the Wolf and the Lamb, then the names of Latin poets, then Roman camps, another fable, and so on. This is not well planned, we think; nor is the vocabulary well chosen. We should begin such a book, so far as possible, with familiar ideas, and if these will not emerge from the first declension and the first conjugation, we should try others; but however suitable *incola* may be, or *nauta*, or even *agricola*, yet the only verbs used at first are our old friends *amat* and *laudat* and *ornat*, and the type sentence of Ex. 2 is *et agricolae et nautae patriam ornant*, translated "both farmers and sailors adorn their country." The style of the conversations is rather stilted; but we are quite amused with a few dialogues on grammar between master and class, quite a good idea. On the whole, it must be said that this book needs remaking; the general lines are quite satisfactory.

English.

Elementary Lessons in English Grammar. By Henry Cecil Wyld. v+225 pp. (Clarendon Press.) 2*s.*—Prof. Wyld's many admirers will be delighted to hear that he has written an English grammar for young pupils. They will take for granted that it is in the best sense scientific, and they will almost certainly expect it to be novel and stimulating. It is both; for it approaches English through

the spoken and not the written word, and it serves as an introduction to general grammar through the medium of English. The import of studying grammar from the side of pronunciation and not of spelling is seen at once from a remark in the preface that "it is an insult to an intelligent child to tell him that horse forms its plural by adding *s*, and to make the same remark about cat." It follows logically from such premises that we should have two chapters dealing with the elements of phonetics; but whether it is the young pupil or the teacher whom the professor has in view in his exposition of the differences in *high-back-tense-round* vowels and their *slack* varieties we do not know. We can say, however, that the young pupil can read *nearly* the whole of the two chapters without difficulty. The chapters on the parts of speech are exceedingly good, and even so difficult a matter as English case-relationships is put simply and cogently. The three concluding chapters, on word-formation, analogy, and the history of English, will be much appreciated. Prof. Wyld's book is a notable landmark in the new movement for treating English grammar as the grammar of a living tongue.

An English Course for Evening Students. By F. J. Adkins. xxxvi+448 pp. (Swan Sonnenschein.) 3*s.* 6*d.*—We are grateful to the Government inspector who advised Mr. Adkins to put into book form the courses of lectures on the teaching of English given to teachers in Sheffield and Rotherham in 1908 and 1909. At a time when evening schools seem to be on the eve of a thorough reorganisation, Mr. Adkins's discussion of their needs and his keen and unconventional methods are profoundly interesting. We are heartily in agreement with his insistence on the need for attractive teaching in the case of these students, whose enthusiasm has to fight, not only against the enticements of gaudy amusements, but against bodily fatigue. Indeed, we can recommend the whole of his introduction as a sound appreciation of a department of our educational system the importance of which cannot be overestimated. The book is divided into three parts: the science of expression, the art of expression, and literature. The first is mainly a restatement of the fundamentals of grammar; the second is concerned with the essay, and contains several compressed essays on subjects of immediate social interest; and the third, although it includes a suggestive chapter on "Notes about Authors and Books," is mainly given up to a general consideration of Shakespeare, with special treatment of the "Merchant of Venice" and "Julius Caesar." All teachers in evening schools will do well to read Mr. Adkins's book from cover to cover, and no one will be more pleased than Mr. Adkins if they disagree with many of his literary and social opinions; they cannot fail to be interested in his methods and to appreciate the keenness and the sympathy he has brought to a most difficult and most important phase of education.

English Exercises for Junior and Senior Classes. By J. L. Robertson. iv+87 pp. (Blackwood.) 1*s.*—An interesting experiment in method. The book consists of a series of passages from English literature, with exercises thereon. "These subsidiary exercises include, not only the commitment to memory of worthy passages of poetry, and the time-honoured gymnastic of parsing . . . but such other exercises as reporting and summarising, punctuation and derivation, annotation and criticism, along with some study of the figures of speech and the laws of verse, and excursions into the field of imaginative composition." In a word, Mr. Robertson has provided for set passages the apparatus of exercises which most intelligent teachers derive from the ordinary literature read in form by their pupils.

The Essentials of English Syntax. By Florence M. Snell. vii+170 pp. (Longmans.) 2*s.*—On the whole, this book is not unfairly named; it is, as its author claims, "an attempt to sift out from much extraneous matter those facts that are essential to a fundamental knowledge of English syntax." It is also, however, not unfair to say that the author's chief specific in treating English syntax is a special brand of graphic analysis, patented, we gather from a footnote, by the late Prof. E. T. Queenby, of Dartmouth College. Indeed, it would seem that terminology is now a matter of copyright, for we find that the term "transitive-absolute" is *used with permission.* This book itself should provide legitimate material for this new patent law, for undoubtedly the "preterit tense of the indicative mode of the progressive form" would seem to require protection from any hasty person who did not recognise in this carnival dress our old and sober friend, *I was going.*

History.

History of Scotland. Vol. iii. By P. H. Brown. xi+497 pp. (Cambridge University Press.) 4*s.* 6*d.* net.—In this volume Prof. Hume Brown gives a thorough account of all Scottish affairs from the Revolution of 1689 to the Disruption of 1843. He calls the period "the age of secular interests"; and there is much about the industrial and commercial history of the country, and the ordinary reader will learn much more than is commonly known about the "African" Company whose expedition to Darien was so notorious and unfortunate. But other matters are by no means neglected. The story of the Highlands and their treatment by the English Government receives full treatment, and there is especially an opinion about the massacre of Glencoe and the policy of which that was an incident which is eminently judicious. Ecclesiastical matters are also fully dealt with, both those of the Established Church and the various secessions from that body, and those of the Episcopalians with their political associations. Besides these matters, there are, of course, full accounts of the Union of the Parliaments of Scotland and England, its antecedents and consequences, and Prof. Brown shows how these latter were causes of trouble between the two countries for many years. Chapters are also devoted to the Stewart risings, to literature, and to the extraordinary system of influence in Parliamentary matters which culminated in the "Dundas Despotism" of the years of the French Revolution. The story is strictly confined to Scottish affairs, and matters of European importance are referred to only when necessary. It is in this connection that we find the only slip in the book. It is strange that Prof. Brown should state (p. 196) that Schleswig and Holstein were sold to George I. by the King of Denmark, as well as Verden and Bremen. But the book is one for which we are grateful; and teachers of British history in the eighteenth century will find it useful as a corrective to many of the omissions and misrepresentations of the ordinary text-book.

Some Famous Women. By L. Creighton. xiii+192 pp. (Longmans.) 1*s.* 6*d.*—The women of whom Mrs. Creighton writes are St. Hilda of Whitby, Joan of Kent, Jeanne d'Arc, Margaret Beaufort, Lady Russell, Elizabeth Fry, Mary Somerville, Julia Inglis, Florence Nightingale, Isabella Bird, Sister Dora, and Queen Victoria. Those who know these personages will be glad to read these pleasantly told stories of their lives. Those who may be unacquainted with some of them cannot do better than correct the deficiency in the same manner. There is an abundance of photographic and other illustrations.

Leeds and its Neighbourhood. By A. C. Price. xxiii+328 pp. (Clarendon Press.) 3*s.* 6*d.*—Mr. Price says in his preface that "this book is not a History of Leeds, nor is it a History of England, but it is simply an attempt to emphasise and illustrate certain aspects of English history by bringing them into connexion with the story of this neighbourhood." But, as he is obliged to confess (p. 50), "of the early history of Leeds very little indeed is known," and (p. 65), after giving an account of towns under Plantagenet kings, "whether this, or anything like this, actually happened at Leeds, it is impossible to say." Even in 1485 "hardly any records of that time have come down to us." The consequence is that we have a history of England from prehistoric times down to the Revolution of 1688, with illustrations drawn from what is known of Leeds and from other parts of Yorkshire. After 1688 the history is confined to social progress, international and constitutional history being ignored; and the story develops more and more into an account of the growth of the city in modern times. The book is well written, and is supplied with a chronological table, a plan of Leeds in early times, and a number of good pictorial illustrations.

Mathematics.

Experimental Mechanics for Schools. By F. Charles and W. H. Hewitt. viii+288 pp. (Bell.) 3*s.* 6*d.*—This is a useful addition to the increasing number of text-books in which the subject is developed from an experimental basis. The course of work covers the elements of statics and dynamics, including the easier parts of graphical statics and simple cases of the rotation of rigid bodies. The deductions to be made from the experiments are usually not explicitly stated, but are suggested by appropriate questions. The first step in the deduction is the translation of the results, wherever possible, into graphical form, and after that analytical expressions are obtained. The experiments described require no elaborate apparatus—nothing which should not be found or easily made in any ordinary school laboratory. Section 91 seems misleading. It is there stated that the acceleration of a trolley or ball *rolling* down an inclined plane is equal to the component of *g* along the plane. Let the pupils compare the results obtained by rolling hollow and solid cylinders, as well as spheres and trolleys, down the plane. Throughout the authors have avoided obscuring general principles by over-elaboration of detail. There is a large collection of exercises, both practical and theoretical, which considerably enhances the value of the book.

Elementary Mechanics of Solids and Fluids. By A. C. Jones and C. H. Blomfield. vi+366+xv pp. (Arnold.) 4*s.* 6*d.*—This volume gives a fairly complete account of the more elementary parts of statics, dynamics, and hydrostatics, the three subjects being treated, so far as possible, simultaneously. This method of procedure necessitates considerable deviations from the usual order, and in the absence of a table of contents of the several chapters or an index it is at first somewhat difficult to find one's way about the book. The treatment is purely theoretical, experimental results only being assumed when necessary, as, for example, in dealing with hydrostatics. A beginning is made with the consideration of motion, uniform and accelerated, the parallelogram of forces being deduced by the aid of Newton's laws from that of accelerations. Considerable prominence is given to graphical methods, including the determination of stresses in simple frameworks. There is a copious collection of examples, a number being fully worked; and a word of commendation must be bestowed upon the very clear diagrams. Considerable pains have been taken to elucidate difficult points, so that even private students should not find their progress seriously impeded. Teachers wishing to combine the teaching of the three subjects will find that, apart from the defect above noted, this is a very satisfactory text-book.

Geometry for Beginners. By C. Godfrey and A. W. Siddons. x+79 pp. (Cambridge University Press.) 1*s.*

Introduction to "The School Geometry." By W. P. Workman and A. G. Cracknell. viii+80 pp. (Clive.) 1*s.*

Both of these books are designed to provide an introductory course of geometry in accordance with the recommendations of Circular 711 of the Board of Education. A very full summary of the contents of this circular was given in a recent number of THE SCHOOL WORLD (vol. xi., p. 182), so that it is only necessary to recall here that it is recommended that introductory work in geometry should consist of easy practical constructions leading by inductive processes to a mastery of the fundamental geometrical concepts and of the fundamental propositions relating to angles, parallels, and congruence of triangles. The scheme thus outlined has been closely followed in both books, the only difference of note between the two being that the second one interprets the scope of the syllabus in a somewhat more liberal manner than the first. Both books are provided with sets of exercises, a number being easy deductions.

The School Geometry. By W. P. Workman and A. G. Cracknell. Part I., xii+248 pp.; Part II., viii+(233–383) pp. (Clive.) 2*s.* each part.—This book is an edition of "Geometry, Theoretical and Practical," adapted to school use by the omission of a certain amount of rather difficult theory and of some explanatory matter. The order of the propositions closely follows that recommended in the Cambridge Syllabus, Part I. covering the ground of Euclid i., iii., and Part II. that of Euclid ii.–vi. The exercises, which are very numerous, are classified as riders, calculations, and practical exercises, and should meet the requirements of all ordinary students.

Concurrent Practical and Theoretical Geometry. By W. J. Potter. Part III., viii+(439–704) pp. (Ralph Holland.) 2*s.* net.—The first two parts of this work have already been noticed. The present one deals principally with the theory of similar figures and related subjects. So much trigonometry is included as will enable boys readily to undertake the solution of triangles. As in the earlier parts, the propositions are preceded and followed by sets of practical and theoretical exercises. The bold type and clear arrangement of the different steps of the proofs of the theorem should do much to facilitate their comprehension. The book is sure to find favour with many teachers.

Science and Technology.

Science in Modern Life. Edited by Prof. J. R. Ainsworth Davis. Vol. iv. ix+236 pp. (Gresham Publishing Co.) 6*s.* net.—The three preceding volumes of this work have been favourably noticed already in these pages. The present volume continues and concludes Mr. J. M. F. Drummond's contribution on botany, and contains, in addition, a survey of zoology by the editor, Prof. Davis, and an account of the scientific aspects of sea fisheries by Dr. J. T. Jenkins. Continuing the plan adopted in the earlier volumes, Mr. Drummond describes, ecologically, important types of natural vegetation, and then surveys the principal tribes of plants from a phylogenetic point of view. Prof. Davis first summarises the history of zoology

and defines the chief groups of animals, and then in successive chapters deals with animals in the order of their evolution in geological time. Both these contributions will be valuable for reference and for the serious student, but the information they contain is of too concentrated a character to appeal to ordinary readers or be intelligible without preliminary study. The essay by Dr. Jenkins is a contribution of quite a different style. It describes the organised attempts made in recent years to investigate the physical and biological phenomena relating to sea fisheries, and some of the results obtained. Without desiring to make any invidious distinction, we venture to express the opinion that Dr. Jenkins's descriptive style is more appropriate in a work of this kind than the systematic treatment followed by some of the other authors. There is, however, much to be commended in the work, both as regards its scheme and its execution, and we welcome the publication of this new volume.

History of Astronomy. By Prof. George Forbes. ix+153 pp. (Watt.) 1*s.* net.—There is no short history of astronomy which provides at the low price of one shilling such a satisfactory statement of the development of the science as is given in the volume before us. Prof. Forbes has contrived to include in his compendium most of the matters of outstanding importance or interest in both ancient and modern astronomy. The whole story is one of the triumph of observation over the deductive methods of the ancient Greeks and the schoolmen of the Middle Ages. Faithful observations made and recorded by Egyptians, Chaldaeans, Chinese, and Assyrians thousands of years before the Christian era are of service to-day in determining the motion of the moon, the prediction of eclipses, the length of the year, the inclination of the earth's equator to the plane of its orbit, and other important problems, while the fantastic views held as to the form of the earth and its relation to the universe are merely of interest as examples of imaginative effort. Prof. Forbes presents the story of the growth of knowledge of the solar and stellar systems in a pleasing and compact manner. Within the limits of a small volume such as this it is impossible to do more than indicate directions of progress, but a bibliography at the end of the volume will guide the student to places from which more extensive views may be obtained.

Microscopists—to whom the name of Leitz is a household word—will do well to obtain a copy of the new edition of the catalogue of microscopes, which Mr. E. Leitz (9, Oxford Street, London, W.) has issued recently. It gives particulars of a number of new models and modifications of previous models. Several of the lower-priced stands are admirably adapted to class use in schools. In a separate catalogue of microscope accessories are described new and improved forms of achromatic condenser, reflecting condensers for dark-ground illumination, vertical illuminator, and mechanical stage. Both catalogues contain interesting explanations and diagrams of the optical properties of the various combinations of lenses, for which the firm is so well known.

A Public School Chemistry for Beginners. By E. C. Lester and B. Tordoff. xiv+240 pp. (Alston Rivers.) 3*s.* 6*d.*—The avowed aim of the authors of this book is to provide an elementary treatise which shall, above all things, be intelligible to boys who are beginning the science. So far as clearness of expression is concerned, they have certainly succeeded, especially as they omit the masses of detail with which often even elementary text-books of chemistry are crowded. The book deals with the chief non-metals, and includes a useful general chapter on the common metals. Its contents are chiefly theoretical, but a few illustrative practical exercises are appended to each chapter. Having said what we can in praise, we are obliged to add that with the main scheme of the book we are not in agreement. The first chapters deal in the time-honoured manner with the distinctions between chemical and physical change, and between element, compound, and mixture. Chemical action, analysis, and synthesis are all defined. Then, after a single chapter on combustion, the student is introduced to atoms, molecules, Avagadro's hypothesis, and vapour densities. That is to say, the book begins with a series of definitions and abstract ideas before any basis of facts is supplied. In an advanced manual of the science this is perfectly justifiable; but surely, for beginners, such a method of treatment is at variance both with pedagogical theory and with practical teaching experience. Definitions and theories are empty words when there is no supply of facts in the learner's mind to give them reality and substance. Turning to matters of detail, we notice the use of the phrase "the molecule of hydrogen occupies 2 volumes"—sure to prove a pitfall to the beginner. Again, the fact that hydrogen combines with an equal volume of chlorine to form twice the volume of hydrochloric acid gas is no proof that the hydrogen molecule contains two atoms, but only that it must contain *at least* two.

Pedagogy.

Principles and Methods of Teaching. By Prof. J. Welton. xxv+677 pp. (Clive.) 5*s.* 6*d.*—The first edition of this valuable work was reviewed in The School World for January, 1907. We are glad that a volume so broad in principle and suggestive in substance has secured the success it undoubtedly merits. To the present edition a chapter on the teaching of modern languages, by Mr. F. B. Kirkman, has been added; and the chapter on geography has been largely rewritten. In other respects the work remains substantially the same. Mr. Kirkman not only discusses the study of modern languages from the educational side, but also states the principles which should determine the construction of courses of lessons. Where only one foreign language can be taught he is in favour of it being French; and if a second language be admitted, German must take its chance with Spanish, Italian, or other rivals. Various methods of teaching are described and illustrated by many helpful examples. The contribution will guide the prospective and the practising teacher into the paths along which the best progress can be effected. The chapter on the teaching of geography, by Mr. W. P. Welpton, is of a less definite character. The advice it contains is sound enough, but the application of it to school work is not so clear. Too much attention is given to stating what the pupil should be taught or should know, and too little to the means by which this knowledge is to be obtained. The place of reading-books, text-books, pictures, maps, and models in geographical teaching is described, but nothing is said of the practical exercises by which pupils can obtain clear ideas of the main facts of geography by their own work in the class-room. In a word, the teacher is too prominent in Mr. Welpton's contribution, and the pupil is considered too much as the passive absorber of the pabulum provided for him. The chapter is an essay on the teaching of geography from which ideas may be obtained, but it contains little that is new and neglects much that has been proved valuable by experienced teachers.

The History Teacher's Magazine. Published monthly—except in July and August—by McKinley Publishing Co.,

Philadelphia, Pennsylvania, U.S.A. 15 cents a copy, or 1 dollar a year.—A group of American teachers of history have combined to issue a magazine dealing solely with matters relating to their craft. Six numbers of the magazine have appeared, and it is pleasing to find that their reception by American teachers has been such as to guarantee the success of the venture. The magazine takes a wide survey of the field with which it deals. It has an editorial staff of no less than ten experts, under the unifying control of Dr. A. E. McKinley. Each of these experts devotes himself to one department; *e.g.*, to methods of teaching, to the training of teachers, to the teaching of civics. The nature of the work undertaken by the magazine will be best indicated by a brief summary of the contents of one of the numbers (that of January, 1910). Prof. Haskins describes an introductory course in history in Harvard College; Miss Burstall, of Manchester, gives her impressions of American history teaching; Mr. R. W. Wells classifies the "Old South Leaflets"; Dr. J. J. Sheppard enumerates the topics which should be included in a study of municipal civics; Prof. J. N. Bowman discusses the question, "Has history a practical value?" Finally, there are portions of serial courses on American, English, and European history, various reports, letters from correspondents, and so on. The magazine promises to be one of exceptional interest and value. It should certainly be read widely by teachers in English schools pending the day when the Historical Association of this country can see its way to the publication of a magazine of its own.

Anales de Instrucción Primaria. (República Oriental del Uruguay.) 716 pp. (Librería Nacional, Montevideo.) 0.50 dollar.—This sixth volume of official records on primary education in the State of Uruguay supplies weighty evidence of the interest taken by the public authorities in educational matters. The present volume, dealing with the year 1909 (January to June), contains many articles of great interest to educationists. Dr. Pérez, the national inspector, writes enthusiastically on the success of the newly founded holiday colonies for the children in the State institutions for orphans and foundlings. In another article Dr. Pérez makes an appeal for artistic surroundings in schools, and Señor Samonati's sound advice on the care of school material forms a valuable corollary to the doctor's theme. The insertion in this volume of a learned though very suggestive treatise on "The Absolute" is perhaps accounted for by the fact that a new law has recently come into force suppressing all religious teaching and religious exercises in State schools. Uruguay schools are the fortunate possessors of a medical board, and the enlightened work of this body might well be noted by our own authorities. Such matters as ideal drinking fountains for children, weekly school excursions, school pharmacies for first aid in 600 rural schools, the medical examination of teachers, and the payment of generous invalid grants, are discussed and decided upon by the medical board. One of its members, Dr. Rodríguez, has proposed that "Every schoolmistress, who produces the official medical certificate to the effect that she is about to become a mother, be given, before the birth of the child, a month's leave of absence on full salary, and a second month, under the same conditions, after the birth of the child." This proposition was approved in March, 1909, by the executive, and is now in operation. Dr. Berro, another champion of teachers, has recently put forward a resolution in favour of the medical examination of teachers, and demands that those suffering from lung trouble be granted leave of absence (six months to three years) with full salary during the first year, and two-thirds of salary during the remainder of the time. If at the end of three years treatment has not restored health, the teacher is to receive a yearly pension equal to one-third of salary. Several foreign reports and articles on educational matters have been translated into Spanish and inserted in this volume. The deliberations of the Uruguay Scholastic Medical Board deserve, we think, an English translation.

Miscellaneous.

Pitman's Studies in Elocution. A Guide to the Theory and Practice of the Art of Public-speaking and Reciting, with over a Hundred Selections for Reciters and Readers. By E. M. Corbould. xxvi+258 pp. (Pitman.) 2*s.* 6*d.*—This volume should prove of value to students and teachers of elocution. The first part, with its technical hints, is simple and practical, although chapter vi., on metre, will appeal only to teachers. The sections dealing with anatomy have been simplified and arranged in a skilful manner. In the collection of recitations the compiler has not struck a sufficiently original note, as the pieces chosen incline to a heavy style, and there is a lack of selections in dramatic and humorous vein. There is a tendency also to repeat old favourites, such as King Robert of Sicily, while no excerpts from the works of Rudyard Kipling, Henry Newbolt, and Ella Wheeler Wilcox are included.

Pitman's Public Man's Guide. Edited by J. A. Slater. vi+438 pp. 3*s.* 6*d.* net.—This useful work of reference is described in a sub-title as a handbook for all who take an interest in questions of the day. The schoolmaster in the habit of setting general knowledge papers may be sure of obtaining many hints from the book, and for those in charge of school debating societies it will be very useful. The information appears to be trustworthy and up-to-date.

Blanchard's Ink-well Cover. 2*s.* 9*d.* per dozen; 30*s.* per gross.—This simple device is the invention of a practical schoolmaster. We have examined it with interest, and have much pleasure in commending it to the attention of headmasters and headmistresses. It is adjusted easily to an ordinary open ink-well, can be cleaned without difficulty, and will not rust. Where it is used the spilling of ink will cease—to the advantage of both books and furniture. The covers may be obtained through a stationer, or from Mr. B. B. Clarke, 6, Claremont Range, Highfield, Gorton, Manchester.

The London University Guide and University Correspondence College Calendar for 1910 provides all the information required by a private student anxious as to how to proceed to secure a degree at the University of London. The University Correspondence College has already assisted an army of private students to graduate, and any person who follows the instructions of this college intelligently and thoroughly is assured of success.

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.

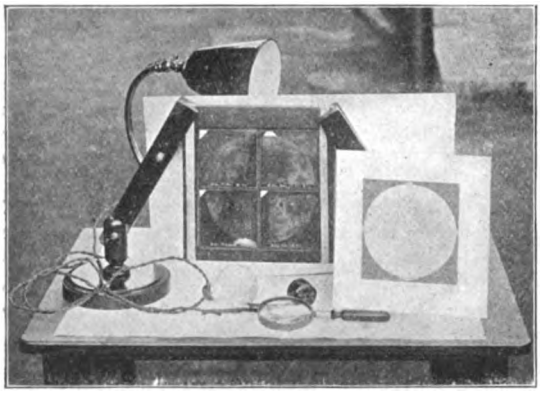
The Value of Lantern-slides in Lunar Study.

IT may be granted that everyone will not readily admit that astronomy is the most suitable subject as an introduction to scientific study, but the writer has always held strongly that for the young mind—which is naturally expansive and imaginative—the large dimensions dealt with in this science tend to expand it and to hold its interest. Our

town life with its busy turmoil, lying so near the pavement level, ever tends to make us look more towards the mud than upwards to the stars. "Two little children looking through the bars, One saw the mud, the other viewed the stars," was a precept quoted by our elders in younger days.

Granted, then, that astronomy is a useful school subject, and that a knowledge of naked-eye work should come first, as it is carried out easily and serves the purpose of a stimulant to the observing powers, the writer has found that the moon should be the first member of the solar system to be surveyed by the budding astronomer. The apparatus required is cheap and simple, for it need only consist of an opera-glass or of such a home-made 2-inch telescope as is described in that useful little book, Fowler's "Popular Astronomy." The opportunities for the study of our satellite are frequent, and her ever-changing aspect and illumination so fascinating, that the young student is prevented from becoming wearied or disheartened by observational difficulties.

The naked-eye appearances having been located on a map, and compared with the fancied features either of the man or woman in the moon, or the man and the bundle and little dog, or the other imaginative markings



that have given rise to many of our lunar myths, the young observer will naturally seek for further detail with whatever instrument he has available. Of maps of the moon's surface a variety may be found in the popular books on the shelves of our public libraries; they range in completeness from the brief one in Prof. Fowler's book to such complex ones as Elger's or Mellor's. For our present purpose the last-named is to be preferred, as the names of the lunar features are clearly marked on it, and no reference to a key is needed.

As our English climate is oftentimes not suitable for young people remaining out at night standing still watching the moon, or any other celestial object, the study of maps indoors is a useful occupation. This study is made all the more real and lasting if photographs are before us at the same time. The present note is to direct attention to a vivid method of learning lunar geography by making use of four lantern-slides which have been published by *Knowledge*, the original negatives having been taken by the wonderful *coudé* telescope of the Paris Observatory. They are supplied by Messrs. Newton and Co., 3, Fleet Street, E.C., at a cost of 1*s*. 3*d*. each, and are indeed beautiful examples of astronomical photography. When placed in proper position and viewed as a transparency the four quadrants form an image of the moon 6 inches across, on which all desirable detail stands out clean and sharp.

To accomplish this the writer had made a wooden frame 8 inches square, twice rebated for glass, allowance being made for the slides to slip in between the two plates. The front plate was plain glass, the posterior one being ground. The top-side of the frame was made removable so that the slides could be withdrawn if needed or replaced by others; this piece of wood was kept firmly in position by two strong elastic bands. Before the frame is finished care should be taken to remove all dust from the saw-cuts, or else the fine dust will get on to the glass, and be very difficult to clean off if it is inside. If required to stand permanently upright wooden feet may be screwed on, or when in use the frame may be supported by two burette stands (as in the appended photograph). Illumination by a strong electric lamp serves to increase the "stereoscopic" effect of the slides, but ordinary daylight is quite satisfactory. If the slides are viewed through an ordinary reading-glass—say 2½ inches diameter—and this be held in such a position that it is tilted slightly at an angle to the line of sight, the added appearance of the features seeming to lie on a globe is obtained, which considerably enhances the illusion that it is actually the lunar surface that we are looking at.

The writer finds that picking out the formations from the map, and then finding them on the slides, using a fine knitting-needle as a pointer, is a great amusement to young adults (and, be it said, to "grown-ups" too); and such interesting features as the "Cleft of Hyginus" (to be seen in a 2-inch telescope) and the "Straight Wall" (or "Railway") are very real when looked at on these photographs through the reading-glass. The frame and its four slides will form a very useful addition to the school museum.

In conclusion, some points of interest in "selenography" may be fittingly included in this note. In lunar study proceed much as follows: teach that the moon once split off from the earth while both were more or less molten; then proceed to state its size and average distance, in connection with this latter explaining an "ellipse" and how one can be drawn by aid of pins, pencil, and string. Make the students draw, to approximate scale, the moon's path, to show that this path is always concave to the sun, a point that, unless it is actually drawn, never seems clear to their minds. Impress firmly that curvature on the lunar surface is a very real thing, and must be kept constantly in mind when viewing such photographs as form our slides. Illustrate the effect of perspective at the edges of the disc by the movements of a plate when looked at from the front or sideways; apply this to the moon by stating that the dark oval area (the "Sea of Crises" or "Mare Crisium") in the N.E. region measures about 280 miles from N. to S., and close upon 400 miles from E. to W., whereas it looks as if its measures should be the reverse. To give a more graphic idea of size, call the diameter of the moon 2,000 miles, and take the three craters lying south of the centre (Ptolemy, Alphonsus, and Arzachel) and project them on a map of England, as has been done in Sir Robert Ball's book "In Starry Realms." The surface of the moon visible at any one time may be stated to be, at full moon, equal to an area rather larger than the continent of South America (Serviss). In the book mentioned Sir R. Ball has a picture showing the lunar area imprinted on a map of Europe to give a more understandable view of its size. If they are shown a photograph of the full moon and asked to compare it with the views on the four slides, it should be apparent to the pupils that, owing to the want of light and shade at that period, these photographs of the four quadrants must have

been taken at times most suitable for each portion; otherwise so much detail could not have been obtained.

A few names of books dealing with the moon, and of use to the school library, may be added: 1st, we have "The Moon," by G. P. Serviss (Appleton), a fascinating work illustrated by numerous plates of lunar scenery taken by the great telescope of the Yerkes Observatory, belonging to the University of Chicago; 2nd, Prof. Fowler's book already mentioned; 3rd, Sir R. Ball's "Popular Guide to the Heavens" (Philip); 4th, Proctor's "The Moon," now forming one of the Silver Library (Longmans); 5th, Nasmyth's "Moon," a cheap edition of which has been recently issued by Mr. Murray; 6th, Irving's "How to Know the Starry Heavens" (Fisher Unwin), which contains as an appendix a useful map and a catalogue of lunar formations; 7th, the fine standard work by Mr. Elger, issued by Messrs. Philip and Son, a monograph which, owing to its fullness, will appeal chiefly to the teacher; 8th, and lastly, Sir Robert Ball's "Time and Tide, a Romance of the Moon" (S.P.C.K.), wherein he tells the twentieth-century wonder tale of the origin and future of the fickle goddess Cynthia.

W. H. COUPLAND.

Hints on Illustrating the Geography Lesson.

WITH a sheet of tracing paper, a liberal supply of stout postcards, a daily newspaper, a bottle of gum, a set-square, an old razor, and a miscellaneous assortment of railway and steamship tourist publications, it is not difficult to make an interesting and valuable collection of illustrative matter—pictorial, diagrammatic, and otherwise—for the teaching of geography.

Upon the backs of postcards enlargements may be made of the various meteorological and statistical diagrams in the "International Geography" and other works of reference, while the judicious employment of coloured inks in many cases heightens the effect. Other diagrams or maps may be more conveniently and rapidly reproduced by tracing. The tracing, complete or in outline, may then be gummed on to a postcard, and subsequently worked up with crayon or pigment to any desired extent.

Many interesting results may be obtained by the superposition of such tracings. For example, the physical features of the Alps may be drawn on a card; then a tracing of the railway routes may be gummed on by one edge only, care being taken that when the tracing paper is held in contact with the card exact coincidence is secured. Various combinations of this kind may be made—political features with physical, physical features with vegetation, coalfields with density of population, July with January isotherms (using distinctive colours), and so on.

A further use of the tracing paper is to take tracings, in the library or reading-room, from the *Times* and other daily weather charts. These, when mounted and pinned up day by day on the class-room notice-board, form quite an attractive record of the advance and retreat of pressure systems. Comparisons should, of course, be made between the barometer readings, wind directions, and so on given by the newspapers, and the records kept at the school.

As for picture postcards pure and simple, these may be manufactured by the score. The railway inquiry bureau, the tourist agency, the steamship office, are fertile sources of illustrations, not to mention the oftentimes instructive printed matter. When the latter has been read, a little manipulation of the razor and set-square, a slight application of gum, and a final squeegee will probably result in a series of postcards no less satisfactory than cheap.

The geographical view-hunter will not, of course, stop at the railway and steamboat excursion counter. The weeklies and monthlies must be scanned in the public libraries, where the magazine rack is often a guide to many valuable trophies. In this way, about a year ago, the writer was led to secure a very good full-page plate representing a scene in the Sahara, published in one of the sixpenny weeklies.

Apart from the weather colums of the daily papers, much real stimulation can often be drawn from the commercial columns. The class should be encouraged to look on these with the imaginative eye, and to cut out suitable paragraphs for common information and discussion. Once a fortnight, say, such paragraphs may be collected and gummed into an album, spaces being left underneath or at the side for comment. It was really quite interesting recently to go over in class a paragraph on London ivory sales, to note the different sources of supply, and to find how Sheffield firms (knife handles) and German firms (piano keys?) were largely represented. Another paragraph of the same issue supplied information about a large purchase of South Wales coal by the Buenos Ayres and Rosario Railway, and led to discussion why the order should be placed in South Wales and not, for example, in the United States or in South America itself. Still another paragraph brought out the intimate trade relations between Sweden and Sheffield in the matter of iron ore. Isolated as these items may be, each of them, nevertheless, gives some insight into what actually does happen day by day in the world's trade, and affords a valuable means of cultivating the geographical habit of mind.

G. BUYERS.

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The Teaching of English and English Grammar.

IT seems a convenient time, now that the interim report of the Joint Committee on Grammatical Terminology has been issued, to consider at what age formal English grammar should be taught, and why.

To teach a child self-expression in English and appreciation of literature very little grammar is necessary—the formal study of English grammar surely comes when one knows the language; the question of "case" (to take one example) can then be dealt with intelligently by reference to the history of the language and its oldest form, Anglo-Saxon. To inflict the question of "case" on a child of twelve or thirteen in order to teach him to speak and understand worthy English is waste of time which can only be justified in this way, that it will help him with Latin or perhaps French. Here someone always asks, "What about who and whom?" Children learn to use who, whom, whose, correctly in the same way as they learn to speak, by hearing and imitating. We all know children who are perfectly familiar with the use of the different "cases," but who say "Who did he meet?" because they live among uneducated people—children who can say their different tenses correctly, but relapse easily into "you was," and so on. The only way to learn a language is by hearing it well spoken and imitating, by reading and thinking about the works of the wisest authors and imitating. Language was made before grammar. It is hardly necessary to emphasise here the importance of oral work in English lessons—the importance of imitation; we must find echoes of the work of the masters in our pupil's work.

If no formal grammar lesson is given until a late age, it will not mean that the child is learning no grammar. So soon as we get a child to think seriously about the words he uses he becomes a grammarian. From his oral and written work he learns what a sentence is, how convenient

it is to separate one thought from another by a full stop; that many short sentences (except in special cases) read awkwardly, and therefore should be, where possible, moulded into one—so we get the use of clauses, &c. (Here there must be oral composition.)

As the child learns the language he evolves the grammar he wants, and the terminology matters little if he understands the useful principles beneath. He will learn to analyse when he tries to clear up some difficult passage by finding out the subject, by rearranging the order, &c. There is no need in an English lesson to teach analysis for the sake of analysis or grammar for the sake of grammar.

Four English lessons are too short for that—and surely English is the most important subject in the whole curriculum; it means the cultivation of the child's taste so that in after-days he will not turn from Shakespeare, Chaucer, Spenser, as "things" he did at school; turn from English as just another name for grammar and analysis to find his literature in cheap, sensational papers which interest, his entertainment in music-halls. Moreover, English lessons (N.B., oral ones) help children to say what they mean. To quote Stevenson: "One thing you can never make Philistine natures understand; one thing which yet lies on the surface, remains as unseizable to their wits as a high flight of metaphysics—namely, that the business of life is mainly carried on by means of this difficult art of literature, and according to a man's proficiency in that art shall be the freedom and the fullness of his intercourse with other men. Anybody, it is supposed, can say what he means; and in spite of their notorious experience to the contrary people so continue to believe." Let us teach, therefore, everything that will help the child to self-expression, to say what he means, to appreciate literature, and leave other business for the time; for instance, these facts: my, ours, yours, are possessive adjectives; two subjects make a double subject (p. 8 of report), &c.

I object to the report because it makes too much of what matters least to teachers of English. I wish people would emphasise more the importance of oral composition, the wonderful histories of words (which help to their correct use), and the history of the language.

In conclusion, I ask in all good faith, What use is the report to teachers of English? How has their grammar been simplified? I agree, on the whole, with the substance of the report, but I do not understand the arrangement, and fail to see the use of a parallel scheme when it is so obvious that it may be necessary to begin the study of Latin with Latin grammar or French with French grammar; but in English we can end with English grammar. If one had the time to teach formal grammar one could not do better than follow Miss Brackenbury's suggestions in her book, "The Teaching of Grammar." Here grammar is recognised "as a subject not to be confused with the acquirement of any tongue, whether ancient or modern." But we cannot, I think, teach formal grammar, because we wish to teach the children English. It is a far cry from the knowledge of grammatical rules and terms to the art of speaking and writing English.

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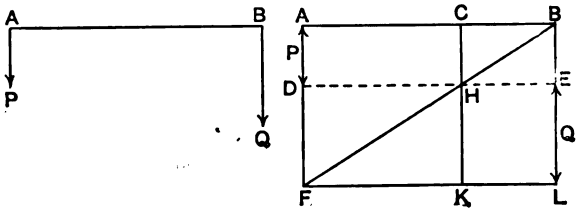
Problems on Parallel Forces Solved Graphically.

I ENCLOSE a graphical method for dealing with questions on parallel forces and centre of gravity which I think will interest some of your readers.

Let P and Q represent, according to a suitable scale, the two parallel forces, and the line AB represent on a suitable scale the distance between their lines of action. To find the distance of the line of action of their resultant from P or Q it is necessary to construct a rectangle AFLB the sides of which are AB and (P + Q) units of length.

In AF, AD is taken equal to P units of length, and through D, DE is drawn parallel to AB, cutting the



diagonal FB at H. If CHK is drawn parallel to AF, then C will be the point through which the resultant of P + Q acts.

This construction can be applied to the type of question in which the magnitude of the resultant, its distance from one of the parallel forces, and the distance between the lines of action of the parallel forces are given, and it is required to find the magnitude of each of the forces. For the rectangle AFLB can be constructed as before, and since C is given, H can be found, and CH will be the magnitude of one of the forces and HK that of the other.

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Literature on the Short Story.

IN a recent notice of Prof. Baldwin's books it was stated that there was no literature on the short story. By the short story was meant the conte so brilliantly handled by Maupassant, Coppée, Stockton, and many others. Since then Messrs. Longmans have sent "The Philosophy of the Short-Story" (*sic*), in which Mr. Brander Matthews treats of the history and of the meaning of this form of literature. In the book, R. T. Peck's, Bret Harte's, and Mr. Wedmore's work on the same subject are touched on. I hasten to make this acknowledgment. The book, however, does little or nothing to explain or give rules about the conte from a teacher's or a story-teller's point of view, although it is an admirable introduction to the whole subject from the writer's position.

THE REVIEWER.

The School World.

A Monthly Magazine of Educational Work and Progress.

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THE RATING OF SCHOOLS.

By E. W. MAPLES, B.A., LL.D.
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AMONG the branches of law which still require reform perhaps none requires it more urgently than that which relates to rating, and in particular that portion of it which deals with the rating of public buildings and institutions, schools, &c.

It may be stated generally that all property is liable to be rated except—

(1) Crown property.

(2) County buildings used for police and courts of justice.

(3) Churches and chapels used exclusively for religious purposes.

(4) Buildings belonging to literary and scientific societies supported solely by voluntary subscriptions.

(5) Lighthouses.

(6) Volunteer storehouses.

(7) Elementary voluntary schools, and at the discretion of the rating authority Sunday and ragged schools.

(8) Houses occupied by ambassadors.

(9) Personal property.

Thus secondary schools, whether endowed or provided by a local education authority, and all elementary council schools are liable to be rated. They come under the general law of rating in the country, which provides that the rate shall be made upon an estimate of the net annual value of the several hereditaments rated thereunto. The discrepancies that exist and the difficulties that arise are due not so much to the actual law as to the manner in which the numerous rating authorities apply the law. The law says that the premises are to be rated at a figure to be calculated upon the rent at which the premises might be reasonably let from year to year, free of all usual tenant's rates and taxes, and deducting from the said rent the probable average annual cost of the repairs, insurance, and other expenses, if any, necessary to maintain the premises in a state to command such a rent.

One would have thought that the law thus stated was sufficiently plain, but such was not the view of the School Board for London, for in the well-known case of Regina *v.* London School Board, 17 Q.B.D. 738, it was maintained that in considering what was a reasonable rent the owner was not to be regarded as a possible tenant. The late Lord Herschell has put the point very plainly in his judgment delivered in the case of London County Council *v.* Erith (1893) A. C. 562: "If the School Board were to hire buildings for the purpose of establishing a school, it could not be contested that these buildings would be rateable, and that the rent which the School Board paid would be a most important element in determining the sum at which they were to be assessed. If instead of hiring school buildings they erected, upon land similarly situate, like buildings, or if they were to buy the reversion of the buildings they hired, and so become the owners, why in either of these cases should the assessment be different? The premises are to them in all these cases of the same value, and their occupation is equally beneficial; why should the sum at which they are to be assessed to the relief of the poor differ?" Lord Herschell goes on and states that in his opinion the object of the legislature would have been defeated "if the question what the owner would have given if the premises had been to let, and he had been free to take them, were discarded from consideration."

Thus, where the owner is the occupier, the rate must be based upon the probable rent a hypothetical tenant would pay for the property or premises, and in determining the rent the owner must be regarded as a possible tenant.

It has further been held that to render an occupier liable to be rated his occupation must be beneficial, but that for an occupation to be beneficial it is not necessary that a pecuniary profit should be made; the only question to be decided is as to whether the occupation is of value.

Finally, in assessing property to the poor rate it must be valued in its then existing state. So far as schools and colleges are concerned, the only real exception to the general law is in the case of voluntary schools. By the Voluntary Schools Act, 1897, it is enacted that:

"No person shall be assessed or rated to or for any local rate in respect of any land or buildings used exclusively or mainly for the purposes of the schoolrooms, offices, or playground of a

voluntary school, except to the extent of any profit derived by the managers of the school from the letting thereof."

A voluntary school has been defined as a public elementary school not provided by the local education authority, and it has been decided that the exemption does not extend to a voluntary elementary boarding school. Since voluntary schools are now maintained by the education authorities, the necessity for this exemption is no longer apparent.

The difficulties and differences then that arise are not due to any want of clearness in the law itself, but to the idiosyncrasies of the numerous rating authorities. It is the duty of the overseers of each parish to present to the Assessment Committee of the Union in which the parish is situated a valuation list which shall detail the various properties situate within the parish and the value of each. This list requires the confirmation of the Assessment Committee, to whom an appeal may be made by the ratepayer. The ratepayer has a further right of appeal to Quarter Sessions should he be dissatisfied with the action of the Committee.

It is in the preparation of these valuation lists that the initial difficulty arises. In some districts the overseers are anxious to value public buildings at as small a sum as possible, whilst in others the opposite course is taken. For instance, in two adjoining towns in a Midland county there are two secondary schools: in the town which we will call A a boys' school and in its neighbour B a girls' school. Each of these schools was erected by and at the cost of the local education authority; the boys' school cost approximately £15,000, the girls' £9,000, and yet the boys' school appears on the valuation list at £150 annual value and the girls' at £360 annual value, with the result that the ratepayers in the latter town are contributing an unjust proportion towards the poor rate.

A still more striking instance of the inequality of rating may be seen in a growing town on the fringe of the metropolitan area. This town possesses a grammar school for boys and a secondary school for girls. The latter has been erected at a cost of £18,000, including the cost of the site, and is rated at £600; the former, an old endowed school standing on a site worth £1,500, has been almost wholly rebuilt at a cost of £8,000; it is rated at only £36. In this case there is no real reason for the great disparity. Still another instance may be given of a boys' secondary school which, erected at a cost of over £20,000, for three years escaped paying rates, was then for three years rated at £100, and then for no known cause was suddenly rated at £500.

The fact that such cases are possible shows the necessity for an alteration in the law, whilst the following instance proves either the ignorance or incapacity of those in whose hands are the preparation of the valuation lists. A voluntary school which under the Act of 1897 was free from rates was sold to the education authority five years ago; one of the vendors—a body of trustees—was an overseer, one of the managers appointed by the education authority was and is an overseer, and yet that school has never appeared on the valuation list.

The causes which tend to make the overseers under- or over-assess public property are usually selfish. In a district in which the local authorities possess a considerable amount of property it will be generally found that the same is under-assessed, but in those districts where there is a large amount of public property in the occupation of bodies other than the local council there is a widespread tendency to over-assess.

If the rateable areas were very wide, say a county area at least, and the rate, whether district or poor, were levied equally over the whole area, it would then be possible to omit from the valuation lists all public buildings and property, but such a course would be eminently unfair where the rateable areas are small. Take, for instance, a district, a large slice of which is used for an asylum: it would not be just for the rest of that district to have to bear the cost of the provision of drains, roads, lighting, education, &c., for the whole district without receiving some contribution from the asylum authority. Were such the case it would be in the interests of every district to prevent, so far as possible, the erection therein of public buildings.

So far as that portion of the poor rate which is available for county purposes is concerned, the county councils have a means of adjusting these differences. In determining upon what basis each parish shall be assessed for the county rate, they are enabled to lower or increase the total assessment value of the particular parish, and in arriving at the amount they usually lay down a minimum rate at which public property shall be rated. Thus it is quite probable that in a county with some six or seven unions in some parishes council elementary schools will be rated at, say, 1*s.* 6*d.* to 2*s.* 6*d.* per school place of the accommodation, whilst in other parishes the assessment will be as high as 18*s.* to 20*s.* The county council steps in and says that the minimum assessment shall be, say, 8*s.* or 10*s.* per school place, and the rateable value of those districts in which the original assessment has been too low is for county purposes increased. The fact that county councils are continually compelled to exercise this power gives further proof of the unsatisfactory state of the law at present.

It has been suggested that the most satisfactory method would be to take a definite figure per school place, and assess the building at the product of that figure, and the accommodation of the school. The figures suggested have varied for elementary schools between 10*s.* and 15*s.*, for secondary day schools between 25*s.* and 30*s.*, and for secondary boarding schools between 50*s.* and 100*s.* The universal adoption of such a method would be a great improvement upon the present diverse systems, but it also would be open to objections. A building upon which there had been

lavish outlay would pay the same as one providing similar accommodation, but which had been erected with a due regard to economy; thus buildings the rental values of which are entirely dissimilar might be rated at the same figure. So long as the rating areas remain as they are at present, the actual cost of site and buildings seems to be the only possible basis upon which a just system of rating can be founded. The extravagant district will then be mulcted for its extravagance, whilst the careful will benefit by its economy. This principle, too, has the benefit that it can be applied to all public buildings, and not only to schools. It would also tend very considerably to lessen the difficulties of overseers by laying down a principle upon which they would be compelled to act.

Some have suggested that the annual value should be taken at 6 per cent. of the cost; thus a building costing £10,000 would be rated upon a £600 basis; others have suggested as low as 2 per cent. Taking into account the fact that the buildings are to be used for public purposes and not private profit, it does not seem unreasonable if a figure smaller than 6 per cent. were taken; 3½ per cent. or even 4 per cent. upon the outlay has been considered as equitable, and probably the former figure is preferable. If this basis were adopted it would be necessary to have some sliding scale of allowances for depreciation, varying with the age and nature of the building. It would not be very difficult to obtain a fair valuation of existing buildings upon such a basis. Of course even such a method might bring about anomalies which none could justify, but they would be insignificant in number, whilst the adoption of such a course would indeed remove anomalies too numerous to mention, and would provide a just and fair basis upon which public buildings, including secondary schools, might be rated.

HOLIDAY CAMPS FOR SECONDARY SCHOOLS.

By J. SCHOFIELD, B.Sc., A.R.C.Sc.

THE issue of THE SCHOOL WORLD for July, 1906, contains an excellent article by the High Master of the Manchester Grammar School upon "A School Holiday Camp." The subjoined notes may perhaps be taken as supplementary to the general information contained in Mr. Paton's article, having been made especially detailed in the matters of preliminary organisation and of finance. In this latter respect no treatment can err in minuteness, at any rate from the point of view of the organisers of such undertakings.

Let us suppose that it is desired to provide for a hundred boys and masters under canvas from some inland town to the seaside for a fortnight during July or August. In this case the principal will assemble his staff during February or March, and, after explanation of the proposals, a camp committee will be elected under his chairmanship, some particularly business-like member of the staff appointed honorary secretary, and a gentleman "good at figures" as honorary treasurer.

It has been found advantageous to form a school camping bank to receive weekly or other contributions from boys intending to participate, the sums in which serve also as the working fund during preliminary arrangements. An advance article should be at once inserted in the school magazine outlining the scheme, and it is advisable that the headmaster should contribute some special matter to this with the view of interesting parents. Old boys should receive invitations to join; they will be found especially useful, and may, of course, be expected to pay an enhanced fee. If any of these have experience on Territorial lines of outdoor camping, they will be of particular service on the advance party. The staff camp committee must immediately proceed to the appointment of a sites sub-committee, the pleasing but important duty of which it is to decide the question, "Where shall we go?"

LOCALITY AND CHOICE OF SITE.

Select the site with a view to easy access. Railway companies have special terms for boys' brigades. The return fare for a fortnight's tenure will approximate to the ordinary single fare for numbers ranging about one hundred campers; special facilities in the provision of a three-ton covered van for camp equipment and reserved carriages for the party will be included. If the journey includes the lines of more than one railway company, try to obtain an individual responsibility, or in default, ascertain the working arrangement in order to fix responsibility. The Ordnance map of the district, 6-inch scale, is a useful detail, and the 25-inch map of the actual site still more so. The factors to be considered in the selection of the site itself are:

(1) Nearness to beach.

(2) Adequate playing area for cricket, football, &c., say about five acres.

(3) A level surface for the tents.

(4) Dry, easily drained soil, preferably of sand or gravel.

(5) Ample and good water supply, which should, in any case, be used with improvised filtering apparatus of sand and charcoal in barrels.

(6) Shelter from high winds for the tents.

(7) Accessibility for carts for delivery of equipment and supplies.

This list of desiderata is somewhat formidable, and in all probability the camp site will be a compromise. It will be best secured by members of the sites sub-committee taking a cycling or walking tour into the district contemplated, and by personal inquiry amongst hotel-keepers, estate bailiffs, and large farmers, obtaining information upon probable localities. A visit to these and close personal inspection will secure the desired result. A sum of five pounds or thereabouts is a reasonable rental for a fortnight's use of the site and privileges.

While in the district, inquiries should be made and preliminary arrangements entered into in the

matters of carting, meat, dairy, vegetable, and grocery supplies; hire of crockery, tables, forms, &c., from a local school or place of worship; camp-servants, and other similar details. A certain quantity of the school cooking outfit must be taken, but carriage charges and difficulties of transit of fragile articles will be much diminished if a loan on the above lines can be effected.

General Camp Equipment.

Subject to the provision by the school itself of dining and kitchen marquees in the manner suggested later, the following *matériel* will be necessary for the hundred campers:

	Weight.
1 Ridge-pole tent...	2½ cwt.
18 Tents (circular)...	12 ,,
18 Sets wood bottoms	72 ,,
200 Blankets...	7½ ,,
20 W.P. ground sheets (mackintosh) ...	½ ,,
120 palliasses	2 ,,

If thought desirable, the wooden tent-floors, the carriage of which is a serious item, may be dispensed with, and mackintosh sheets substituted. The above may be hired from the War Office by application at the various Ordnance depôts throughout the country, the tenure of hire being twenty-eight days, inclusive of transit, and the charges about £8. There are private firms who cater for this class of business, but prices submitted to the writer work out approximately double those imposed by the Ordnance authorities.

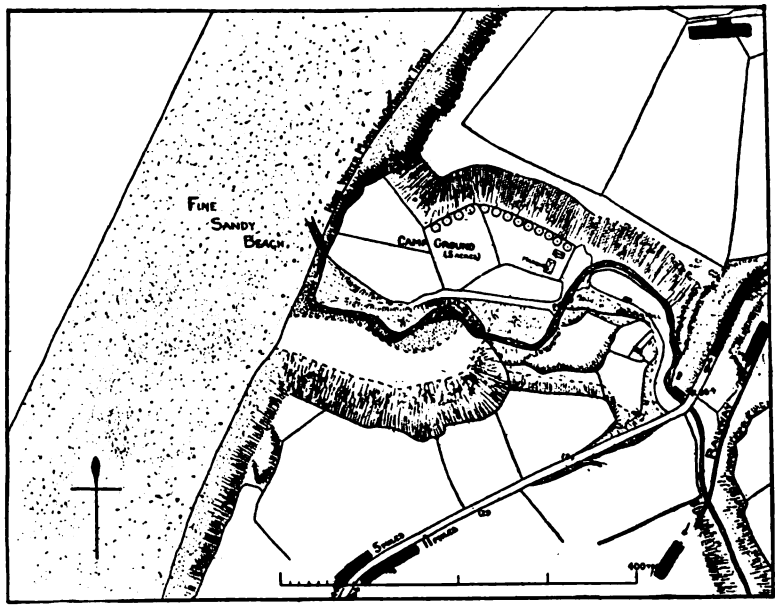

Fig. 1.—An Ideal Camping Ground.

In addition to the above, there are other items of camp equipment which must be provided by the school itself. A cooking stove is essential, and a good one, of which the writer has personal experience, can be bought for about £12 from Messrs. Hookham, of Birmingham. Its weight is about three hundredweights, and it will require about one and a half tons of coal for the fortnight's duty, when worked along with an open camp-fire for boiling purposes.

A full supply of cooking appliances must be taken: half a dozen large pans for potatoes and vegetables, a dozen oven-tins for joints, puddings, and pies, store tins for all groceries, &c. Enamelled ware is the ideal for camp purposes. Hire crockery on the spot as indicated above.

In the case of a holiday camp being initiated, a grant from the school governors, or the proceeds of a subscription amongst patrons of the school, or the profits from a concert, must be devoted to the purchase of a certain amount of initial equipment. A couple of second-hand marquees and a cooking stove could be bought for from £35 to £50. A quantity of extra tent-rope must be taken, and a supply of fifty tent-pegs of various sizes may be made in the manual training department, for use if high winds are experienced. The same department will doubtless construct tent-hooks to bolt round the central poles, and about four feet of iron fire-grate for the trench camp-fire. A rough frame, canvassed round, will be required for the latrines, and another round the cooking stove as a protection for the *chef* and his staff.

A number of paraffin lamps, say ten, will be required for the marquees and officers' tents, and about twenty-five buckets for general camp use. Two barrels may be procured locally, and well cleaned for the storage of water for cooking and kitchen purposes. A hundred bricks should also be obtained in the camp locality for raising the cooking stove and putting sides to the trench fire. The boys will provide their own candles for the bell-tents.

Re Latrines.—A long trench, say 12 feet by 2 feet by 3 feet deep, should be dug, and a stiff rail of 3 inches square deal supported on uprights 18 inches to 24 inches high in front. The whole should be canvassed round with a cheap sacking, and fresh earth should be thrown in daily by the orderlies of the camp. In this case liquid or other disinfection will be unnecessary.

For general camp details the reader may consult with advantage: "The Camper's Handbook" (5*s.*); or "Cycle and Camp" (1*s.*), by T. H. Holding, 7, Maddox Street, London, W.; or "Fixed and Cycle Camping" (1*s*), by W. T. Pearce, 12, Burleigh Street, London, W.C.

The advance party should be equipped with a well-stored tool-box. A couple of spades, a mattock, and a sledge-hammer are useful articles to borrow locally. The tents and marquees must be erected, and the camp equipment generally in-

stalled by a pioneer party, who will precede the main body by about three days. This party will number about twelve persons, and must include the camp secretary, the captain of the pioneers, the cooking staff, and a number of the stronger and older campers. The camp secretary will be required for the making of local contracts for supplies, and the oversight of the transit of goods and general traffic arrangements.

The captain of the pioneers is undoubtedly the most responsible officer in camp. He should, if possible, be a person of camping experience. He must be thoroughly familiar with the details of tent erection, provision of good water supply with proper filtration, care of tents during windy or wet weather, and all the detail of life under canvas. The drill instructor of the school, if he has this knowledge, is an excellent choice for captain of the advance party, particularly as the discipline of camp-life is semi-military. In any case, choose your captain with care; if he cannot be obtained within the school, seek out some man of military experience for this post.

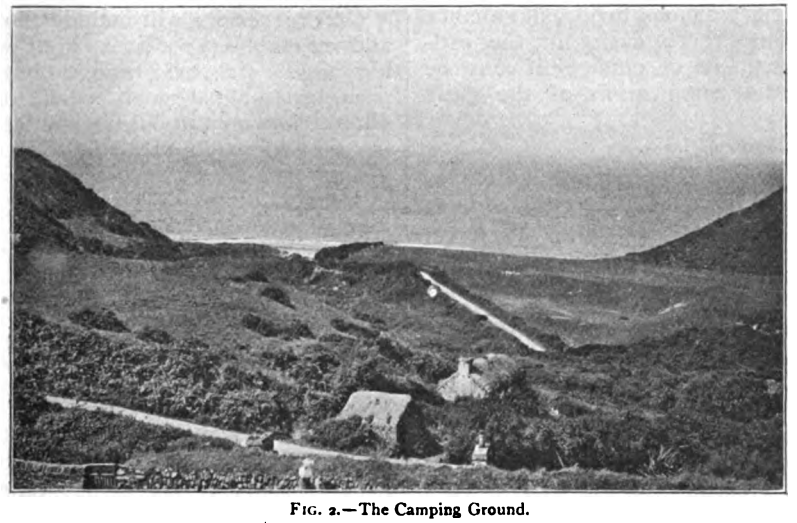

Fig. 2.—The Camping Ground.

Camp Kitchen and Dietary.

The first question to be settled under this head is that of the cooking staff. Undoubtedly a *chef* is most desirable, and probably the charms of a fortnight under canvas might tempt some good man cook from a local hotel to undertake this very important department, and young fellows may be found to combine the under-duties with the outing at a comparatively low fee. Actual table-service is performed by the boys themselves acting as orderlies, about ten each day (in rotation), supervised by a master as officer for the day. If male kitchen staff cannot be obtained, then women cooks must be taken, and the school caretaker must be engaged to do stoking and odd jobs about camp.

Maids for washing table-ware, preparation of vegetables, &c., may possibly be hired in the locality itself. It must be clearly understood that there are duties and tasks in camp-life which, in the interest of health, comfort, and enjoyment, are essential, and are therefore not necessarily menial or degrading. Careful thought must be given to the kitchen arrangements. Cooked food cannot be stored in a camp, so that there is greater proportionate waste than under more permanent conditions. The menus should be so arranged that the kitchen staff do not have heavy cooking twice in one day, and the table arrangements should be thrown upon the orderlies. Many details may be prearranged to facilitate the smooth working of the culinary department. To particularise, a bread-slicing machine is essential; potatoes should be steamed in cord-nets to simplify handling; a good supply of madeira and sultana cake in slab form should be made beforehand; porridge at breakfast and soup at dinner should be invariable items; and, generally, a little forethought with consultation will work wonders in relieving the heavy work of the cooking staff. It will probably be found desirable to take the general groceries along with the camp equipment, as they can then be obtained at home from well-known firms and at special rates; but the more perishable and less portable articles—*e.g.*, butter and flour—should be delivered daily at the camp by the local baker or grocer along with the bread

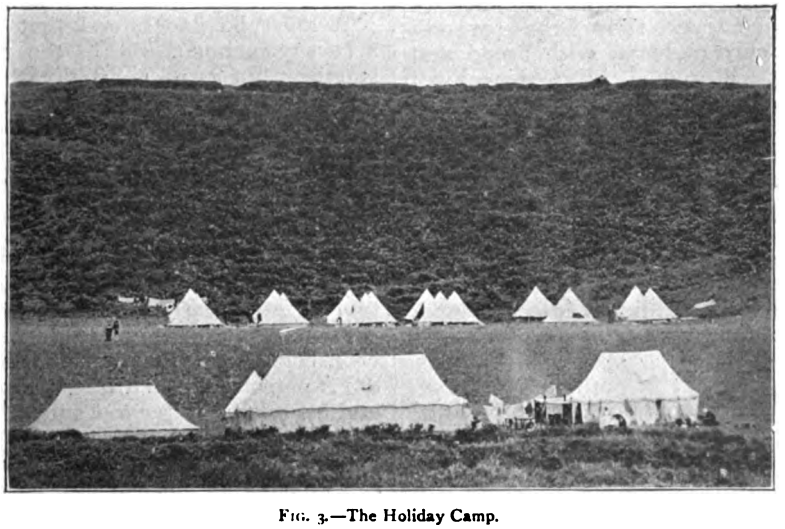

Fig. 3.—The Holiday Camp.

supply. Bread could be made in camp, but it will be found that the kitchen staff have sufficient employment to prevent *ennui*, and but little would be saved by this procedure. In estimating supplies, it must be remembered that there will be visitors to camp. Some parents, governors, and friends of the school will probably centre their holidays in the neighbourhood, and their entertainment in camp at a judicious tariff will enhance the treasurer's balance. To assist in the estimates for the department of cuisine, it may be helpful to sketch the composition of the daily meals.

Camp Meals.

For breakfast, porridge, bread and butter or dripping, and cocoa or coffee, form the staple; changes may be rung upon bacon, fish, eggs, and potted meat on selected days. Dinner may be opened with a good soup of vegetables in a meat stock, followed by a joint and two vegetables, and a third course of pudding or fruit-tart. Amongst puddings, jam-roll, Yorkshire pudding with jam, and the numerous milk puddings are suitable; fruit tarts should be made the previous afternoon and served cold to relieve the pressure on the kitchen department. The consumption of jam in a camp of this type will probably astonish the catering authorities, but it may be satisfactorily met by the employment of stewed apricots prepared as required from the dried fruit. Boxes of 25 lb. weight may be taken with the party, and about three will be needed. The camp teas are of a light character, on the whole: tea, white and brown bread and butter, currant buns, cake, simple pastries, jelly, blancmange, simple salads, cold boiled ham, and potted meat form a range capable of permutations and combinations. Supper should be severely plain: cocoa and currant buns, with bread and butter and cheese, will suffice. Experience will probably show the impossibility of allowing milk, hot or cold, generally at this meal, but a few biscuits may be added for variety. This meal should be taken without any other table-laying than is absolutely necessary. The above outline will be found sufficiently liberal, and if due oversight is exercised at the tables, no boy will go lacking in any respect.

N.B.—In all cases divide dishes into portions, and serve round in that way.

Food Estimates.

As regards quantities and prices, the subjoined details will be fairly approximate for a camp of one hundred boys and masters with their visiting friends:

Butter.—About 7 lb. daily, say 100 lb. at £5 10*s.*

Tea.—A 20 lb. box at £1 10*s.*

Sugar.—About 25 lb. daily for all purposes; say about 350 lb., one half lump, at £3 10*s.*

Flour.—From 15 to 20 stones at £1 10*s.*

Coffee and Cocoa.—About 7 lb. each; total, £2 15*s.*

Milk, &c.—From 100 to 120 gallons of milk and about 5 to 10 quarts of cream will be needed, costing about £6; and about 500 eggs will be used in cooking and for occasional breakfasts.

Bread.—This item, including white and brown loaves and currant buns, will probably cost about £10 for a fortnight's supply, and about 100 to 120 lb. of slab cake should be taken forward with the party.

Greengroceries will include the supplies of fruit and vegetables; potatoes, say 5 stones daily, costing about £3 10*s.*; and cabbages, cauliflowers, peas, broad and French beans, tomatoes, lettuces, plums, bananas (bought in the large bunch of from 15 to 20 dozen), &c., to a value of perhaps £6 or £8.

Meat.—Joints for roasts will be the principal item, and an average of 9*d.* per lb. all round will perhaps be agreed upon between the camp butcher and the secretary. A quantity of suet and some stewing meat for the soups will also be necessary. Arrange for a selection of the most suitable joints in the interests of the carvers. From 450 to 500 lb. will be sufficient, and may cost about £18.

General Groceries.—Dried fruits—*e.g.*, apricots and prunes, currants, raisins, and candied peel—to a value of £3 or £4. A small 30 lb. roll of bacon and three or four hams, say £3, and a 50 lb. cheese at about 30*s.* A quantity of various jams, from 70 to 100 lb., at £1 to £2. A 28 lb. bucket of lard at 15*s.*, and about half a stone each of rice, sago, and tapioca, totalling 10*s.*; and sundries. These include jellies and custard powders, condiments and spices, treacle; and a number of household stores—*e.g.*, soap, soda, matches, candles, paraffin oil, &c., &c., must be included.

It must be understood that a high degree of accuracy is impossible in the estimates for food supplies, but as an approximation a sum of about 7*s.* 6*d.* per head per week will be found to be a safe working basis. In the matter of dining arrangements, one row of trestle-tables with forms on both sides might be set down each side of the large marquee, along with a cross-table at the top for masters and visitors. The central space is thus left open for serving. The orderlies for the day, one from each ten boys, lay the tables, fetch the dishes, and distribute the carved portions, and afterwards remove the used crockery, &c. One master, the officer for the day, patrols the marquee, directing operations and exercising a general supervision. Carving of joints, &c., is best performed at suitably separated positions by masters or older boys. A white oil-cloth makes an efficient and easily cleansed table-covering. After the conclusion, the carvers and orderlies take their own meal, being waited upon by the orderlies for the following day. Organisation and discipline are essential to the smooth working of the camp meals. By conference with the *chef*, the menus may be prepared some days in advance, and the ordering and preparation thereby greatly facilitated. Lastly, a stock of mineral waters and sweets may be kept in camp

and sold to the boys by the senior orderly as demanded.

CAMP ROUTINE.

The school magazine, for the month before the date of camp, is a suitable medium for communicating the details and regulations of camp-life. An outline of suitable matter is appended:

Daily Rota.—The camp arrangements are as follows: Breakfast, 8 a.m.; tent inspection, 9; dinner, 12.30 p.m.; tea, 5; supper, 8.30; lights out, 9.30.

GENERAL REGULATIONS.

Orderlies will be selected, about one per ten boys, for daily camp duty, consisting in attendance at table, &c. The occupants of each tent must elect a corporal, who is responsible for the order and cleanliness of the tent. In wet weather the corporal must attend to the slackening of the guy ropes, and should warn boys against touching the inside of the wet canvas. Instructions must be given *re* camp boundaries, rambling over adjacent property, permission to leave camp, Sunday service, provision of games, bathing arrangements and times, &c.

LIST OF REQUIREMENTS.

Each boy should take an extra blanket or rug; an empty pillow-case or cushion, to be stuffed with straw at camp; sleeping-suit or nightshirt; bathing costume or drawers; two or more bath-towels; sponge-bag with soap, &c.; hair-brush, comb, and tooth-brush; football knickers or cricket flannels; two flannel or cricketing shirts and sweater, if possible; three pairs of stockings; one pair of old boots or football boots for games; one pair of canvas shoes as for drill; one overcoat or waterproof; handkerchiefs; sun-hat; two or three extra collars, &c., &c. Goloshes are useful in continued wet weather. The boys of each tent should arrange for one of their number to bring boot-brushes, with dubbin and polish, and another boy should provide a small mirror and wash-bowl. Best clothes should not be taken, and nothing unnecessary. Bags and kit-bags are better than boxes and trunks in a tent. It is an advantage to send on most luggage beforehand along with the camp equipment, and specially printed gummed labels and tags should be provided in two colours, for the out and home journeys respectively, for all articles of camp luggage, stores, or equipment. The Ordnance Department will furnish a limited number of official labels for their own property.

FINANCE.

This item must inevitably vary widely with the particular circumstances of the case, being enormously affected by the railway expenses. After careful estimates have been made, based upon the offers of contracting parties, it will be found that a sum of from 30*s.* to 40*s.* per head will be sufficient to cover the costs of an outing of this type and magnitude for a fortnight. This figure is subject to the reservation made above *re* the initial provision of stove and some camp equipment. The prices will be graduated according to age—*i.e.*, corresponding to differences of railway fare—and old boys and masters may contribute proportionately more. Some items of expenditure in an actual case are here given for illustration:

	£
Hire of marquees and tents, &c., per Ordnance depôt	10
Railway fares and goods charges ... ... about	65
Bakers, butchers, grocers, farmers, &c., bills ... ,,	70
Rent of site, cartage, straw and coals	12
Wages of cooking staff	5
Ironmongery, camp stores, printing, &c.	5
Sundries, secretary's expenses, &c.	10

Experience will prove that camp-life is a healthy life; bruises, colds, and minor ailments may be expected, and it is well to provide a first-aid chest under charge of a master to meet these contingencies. The strictest supervision of the water supply on one hand, and the removal of refuse from camp on the other, must be maintained. All else in hygienic matters may be left to the combined influence of sunlight, fresh air, good food, and exercise. Finally, an undertaking of this kind offers nothing insurmountable to industry and enthusiasm. A mass of small detail must be gone through, but the returns are great. Given an adequate proportion of fine weather, boys and masters alike will style it "the holiday of their lives." Valuable experience will be gained, health recruited, and genuine enjoyment secured. In short, holiday camping, once tried, will be repeated, and a new feature added to the life of the school which will remain long in the memories of the participants.

MATHEMATICS AS A SCHOOL SUBJECT.

By B. C. WALLIS, B.Sc., F.C.P.

IN view of the widespread interest in, and discussion of the methods of mathematical instruction advocated by Prof. Perry, it may be permitted to one of a younger generation, who is actively engaged in the teaching of mathematics in school, to contribute to the general discussion some account of a scheme of mathematics drawn up for a secondary school with the view of co-ordinating the teaching of that subject within itself and with the other scientific subjects of the curriculum. It may be permitted, further, to add some explanation of the special points in which this scheme seems to meet the particular case for which it was propounded. The due correlation of the subject-matter to be taught in any school is largely a matter which can be settled only for that school, but it may appear in the sequel that the efforts in this direction for one school may be suggestive and useful to those who have to settle the work to be attempted in other schools, even those of slightly different type.

THE DOUBLE VALUE OF MATHEMATICS.—Mathematics may be taken to serve two functions in the education of the child: first, as a tool whereby the child may gain access to, and facility in the

comprehension of, mental processes which are requisite for other subjects which it is advisable the child should know; secondly, as an end in itself, for the sake of the discipline and training to be obtained from mathematical study. In support of the first point, it may be adduced that men in our days are so dependent upon mathematical methods and results in the work that must be done after school days are over, that some appreciation of these methods and processes is essential to the pupil who receives but the merest elementary form of education; this fact is realised so completely that it has been definitely suggested in some influential quarters to change the name and subject taught in elementary schools as arithmetic into elementary mathematics. Under the heading of mental discipline, it may be argued that there is no school subject within the range of which so clear and definite an acquaintance with, and training in, scientific (or logical) method can be obtained for the pupil. A definite training in logic and scientific method would be beyond the capacity of the ordinary pupil, if only on the ground that such a training would not afford sufficient opportunity for the exercise of his physical activity.

It may be assumed at the outset that a school course of mathematics must fulfil to some degree the needs of the pupils and the subject under these two heads.

Mathematical Teaching should be Non-compartmental.—It is an admitted evil that a child frequently fails in his application of his mathematical knowledge and powers whenever he is called upon to use these in unfamiliar surroundings; for example, his power of computation in the science laboratory frequently is less clear and accurate than in the mathematical classroom; again, his ability to interpret geometrical truths is often perceptibly weaker when he is called upon to use it in connection with geometrical figures placed before him in connection with trigonometry, co-ordinate geometry, or geography. This evil is perpetuated for the child by the fact that in most cases he is provided with separate text-books for the various parts of mathematics which he studies, and—it is to be feared—sometimes by the declaration of his teacher that an argument he puts forward belongs to algebra and not to arithmetic, and so forth.

To meet this evil two plans were adopted: first, for the child, in his time-table and in his lessons the subject was always called mathematics, never arithmetic, algebra, &c.; and, secondly, the teacher took every legitimate opportunity to break down the tendency observed among the pupils to place their mathematical knowledge into compartments. In the lower forms, where text-books were only used for the sake of the examples which they contained, this interweaving of the various phases of the subject was successful to such an extent that in the upper forms it was possible to cast light upon obscure points by varying the method of investigation, say, from that of pure geometry to that of graphs (elementary co-ordinate geometry).

The Tyranny of Names.—A rule was made that the technical terms of mathematics should be delayed, that the pupil should have acquired very great familiarity with the idea before the technical term—which is only of use as a handy means of reference—was known. This plan answered very well, as is shown by the fact that the older boys who had been trained upon the older plan of tackling a set idea from its name in a definite part of a text-book, beginning with the name, passing on to the explanation in the text, and the working of examples from the text, were not able to damp the enthusiasm of the pupils undergoing the newer course by such remarks as, "Oh! you're doing logs., are you? Aren't they hard? We did not do logs. until we were in Form V. They'll be much too hard for *you*." Remarks such as this, common enough from the older dullards to their juniors, lose their point when the junior has a different outlook upon the part of his mathematical experience which his elder sneers at.

Enthusiasm is so precious that our endeavours to obtain it and foster it are of prime importance.

Mathematics in Relation to Science.—The relationship between the mathematical and scientific work of the boys was a subject of discussion between the respective masters, as the school organisation kept the science master teaching nothing but science. The discussion ended in a request to the science master to prepare a list of those parts of the mathematical studies which were of special use to him, with particulars as to the particular place in the school career of the boy at which he needed to use these mathematical ideas. It was further agreed that a considerable portion of the work in measurement which had formed in previous years the first year's work in science (physics) should be done by the mathematics master in the classrooms during the first year of the Board of Education's four years; *i.e.*, when the boys had passed beyond the preliminary stages of school life in which their mathematical training had been confined to arithmetic.

As a result of this discussion, it became obvious that, for the purposes of the science lessons, special importance should be attached to the work in decimal fractions, so as to make them of more importance as a means of computation than vulgar fractions, and that the ideas underlying the trigonometrical ratios should be taught for the angles from 0° to 90°, during the first year, with as much attention to approximations and contracted methods of computation as was found possible. During the second year logarithms and quadratic equations should receive special attention, and in the third year some ideas as to the use of the differential coefficient in connection with maxima and minima should be obtained from the work in connection with the graphical solution of quadratic equations; a rough slide rule should be made by each boy, and some idea as

to the method of use of a slide rule obtained. By actual trial it was found that these requirements of the science master could be fulfilled satisfactorily; and the mathematics scheme contains these parts of the subject in the places named. Twenty lessons from the old first year's course in physics were incorporated into the first year's work in mathematics.

Mathematics in Relation to Geography.—The geography in the school was taught practically, and thus took its place as a scientific subject; and, after a similar conference between the masters engaged in the two branches of work, it was decided that for geographical purposes the arrangements already agreed to for the first year—namely, decimal fractions and the simple trigonometrical ratios—would suffice, provided there was in addition much practice in graphical work and in the measurement of areas by means of squared paper. The only other addition desired on geographical grounds was that of much practice in solid geometry and section-making by means of the building up of some of the regular solids from stiff drawing paper and the cutting of these models for the purposes of showing sections.

By these arrangements the mathematical teaching, which was in the hands of four masters, was co-ordinated within itself and with the scientific work.

Kinds of Mathematical Proof.—After a careful consideration of the subject-matter of mathematics, it becomes clear, especially in relation to the ideas already laid down, that consideration must be given not only to the methods to be adopted in teaching mathematics, but also to the kinds of proof which are available and legitimate in consideration of the stage of mathematical development of the child at various stages in his school career. These kinds of proof are three in number: first, the "proof" which asserts that, because a given result has followed from a given process in past experience, such a result may be expected to follow from this process in the future; secondly, the empirical proof; and thirdly, the deductive proof. Each of these forms of proof has a legitimate place in a course of school mathematics. Examples of the three kinds are to be found in relation to the straight line graph. From much experience of plotted graphs the pupil eventually arrives at the conclusion that, when a line is plotted for points which have a relationship between the variables which can be expressed in the form $ax+by+c=0$, the line will be straight. This "proves" for him by the first kind of proof that a straight line graph depends upon an equation of this form. By further investigation, he discovers that if he starts with such an equation he obtains such a graph, and from this idea he discovers the conditions under which straight line graphs may be perpendicular or parallel to each other, and of this he is sure by the empirical form of proof which he has adopted. His proof is empirical at this stage—which is that of the first year—since he deals only with numerical constants. The deductive proof comes at a later stage, when he begins co-ordinate geometry.

Similar series of changes in outlook on the part of the pupil occur in connection with the graph of quadratic equations. In the first stage he arrives at the conclusion that a quadratic equation always yields a graph of a certain form; the form has become familiar, and then the particular equation with which it fits; this in the second year. Later his outlook becomes empirical, for he discovers that, by an examination of the equation, he can deduce an equation for the axis of symmetry of the curve, and from this the co-ordinates of the turning point. By the end of the third year he arrives at some idea of the differential coefficient from empirical considerations of the slope of the curve, and finds this idea useful in connection with problems involving maxima, &c. Later in the course he arrives at a deductive proof.

The first form of proof becomes of importance, thus, as a step in a connected argument, and this position is necessary for the teaching of contracted methods of multiplication and division: the necessity for, and the sensibleness of, approximations arises out of a consideration of results of practical work, and this leads to the idea of approximate methods of calculation. He finds that if certain things are done, he obtains results correct to a definite number of decimal places, and at this stage (first year) he is satisfied with the validity and usefulness of contracted methods of calculation.

The empirical form of proof arises out of the early work in geometry; here certain facts are discovered in connection with the shapes and properties of figures. For example, the properties of a square are thus learned, since they are necessary to the use of squared paper; again, the practical exercises which determine the value of π rarely pass beyond the stage of empirical proof.

Geometry has its importance increased, since it affords the first approach to the idea of a conclusive deductive proof; and here the method of attack is of vital importance. Two methods are suggested. The first arises in connection with the bisection of an angle. This is done and known empirically; it is desired to write out a conclusive proof that the method adopted is universally true. This immediately requires the proof of Euc. I. 8; the proof of this proposition requires the proof of Euc. I. 5, which in its turn requires Euc. I. 4, and from this consideration the order of these three theorems is built up, as a necessity in the development of a logical explanation. The separation of these propositions into theorems becomes in time a matter of convenience. Or, secondly, the sequence of proofs of a deductive character may be developed from the consideration of the deductive proofs of the experimentally discovered properties of an equilateral triangle. A similar set of theorems is established, and these are fitted into the others to make a logical order.

Throughout the course the kind of proof used depends upon the activity of the pupil.

The Method of Discovery.—It is obvious that in such a course as is here outlined, great and frequent recourse is had to the ability which children undoubtedly possess of finding out facts for themselves. Pupils are in this way kept constantly active, and some become sufficiently enthusiastic to pass on to discoveries beyond those required for the immediate purposes of the work, and it sometimes becomes necessary to curb and guide this enthusiasm so as to keep the attention of the class on a small range of subject-matter until this is thoroughly mastered.

The First Year's Work.—Some details may here be given of the first year's work. In arithmetic, the first part of the year is devoted to the decimal fraction, which is taught by means of measuring with a ruler marked in tenths of inches instead of in twelfths. The second decimal place follows from (1) approximations in measurement between tenths, (2) the use of squared paper marked in hundredths of a square inch. The applications of the four rules in the case of decimal fractions come first from the practical work in measurement, and then the idea of percentages as a form of expressing hundredths is introduced —purely a variant of the decimal fraction to two places—and later to the idea of simple interest, taken decimally in connection with the interest on £1 under various conditions as to rate and time. Where the problems for investigation and the data in connection with them do not arise out of the practical work, the pupils are themselves allowed to suggest their own examples. The examples in the text-books come as a last resort.

Algebra is developed from the earlier arithmetic as a generalised form of arithmetic—this in the case of the four rules—and simple equations arise from the problems in connection with the practical work. The arithmetic and algebra meet on the common ground of proportion which is approached by the method of unity, and the ideas of ratio—this as a variant of the vulgar fraction notation—and then these forms of statement are discarded.

The geometry is mainly experimental, and fits into the practical work in measuring taken over from the science syllabus, and with the work in connection with the straight line graph.

The Position of the Decimal Point.—Wherever possible, the pupils are expected to write down before doing any calculation on paper an approximation to the result desired. This first approximation serves two purposes: it tends to prevent errors in computation, and tends to separate the thinking part of any process in computation from the merely mechanical accompaniment of finding the result to a desired degree of completeness. This method of first approximations also serves a valuable purpose in connection with multiplication and division in relation to the position of the decimal point. If this approximation be made, the position of the decimal point is settled, and therefore it may disappear from the succeeding paper calculations, which are only necessary to establish the significant figures in their correct order.

The school scheme of mathematics differs in these particulars only as to quantity of ground covered from the scheme of any ordinary school. The boys at the end of the third year tackle successfully the Oxford Junior Local examination, and in the fourth year the Oxford Senior Local examination.

SCHOOLS OF OTHER DAYS.

By E. M. Blackburn, M.A.
The City of Leeds Training College, Leeds.

At the present day there is a tendency to assume a somewhat deprecatory attitude towards the education of other days; and certainly the "temples of good intentions" of the nineteenth century were in a most deplorable condition. In these Dickens claims that "an exceptionably sharp boy, exceptionally determined to learn, could learn something, and having learnt it could impart it much better than the teacher." It is not fair, however, to judge of the work of the present day by that of a time when vitality in this direction was at its lowest ebb. A further examination into the existence and condition of schools of past centuries shows that education has always been considered of the greatest importance. The claims of Plato and Aristotle; of the deeds relating to the founding of monasteries and churches; of writers like Elyot, Ascham, and Milton, all prove this. Apart from the explicit treatises on education, our popular literature teems with incidental references to the subject. The prosaic commonplace school seems to have no justifiable place in literature, yet to some extent the character of the school and teacher of every period is reflected in the popular writings of the day. Such writings, indeed, have perpetuated the pictures of these "tenements of learning." The teacher who has experienced the difficulties of making clear to children the significance of units will read with renewed interest of the examination of the harassed Hatter in "Alice in Wonderland":

> "When did you begin?" said the King.
> "Fourteenth of March, I think it was," the Hatter said.
> "Fifteenth," said the March Hare.
> "Sixteenth," added the Dormouse.
> "Write them down," said the King to the Jury, and the Jury eagerly wrote down all three dates, and then added them up and reduced the answer to shillings and pence.

Most vivid pictures of schools are portrayed by the poets, which, if read carefully, would give a fair idea of the development of education. One realises, moreover, that schoolboys are schoolboys all the world over and through all time. Herondas, a Greek of the Alexandrian period, has described one whom a mother, in despair, has brought before his master:

Flog him, Lampriscos.
He's spent my all
In playing odd and even; knucklebones
Are nothing to him. Why, he hardly knows
The door o' the Letter School. And yet the thirtieth
Comes round and I must pay—
His writing tablet, which I take the trouble
To wax anew each month, lies unregarded
I' the corner. If by chance he deigns to touch it
He scowls like Hades, then puts nothing right.
If we set him to recite some childish piece
He sifts it out like water through a crack.
"Apollo"—pause then—"hunter."
Yet he knows
The seventh and twentieth of the month,
Whole holidays—as if he reads the stars.
(Translated by Freeman, "Schools of Hellas.")

Apparently the truant of the fourth century B.C. does not differ from one of to-day, and despite his wickedness the rascal appeals to us through the ages. With but little imagination, assisted by a little knowledge of Greek schools, we can form a fairly accurate picture of his daily life. We see him setting out to school at sunrise, carrying the writing tablet so carefully waxed by his mother. Unlike most Greek boys, he did not value school, and doubtless thought much more of the heterogeneous assortment of pocket treasures of which "knucklebones" formed but one item. We can imagine him proudly coaxed to say some childish piece, and we are reminded of similar efforts of our own boys and girls. This incidental reference reminds us, too, that the "Letter School" was no mere infant school, but the ordinary primary school, where the boys were instructed in recitation and mastered the literature of their language. School bills were paid monthly, while the seventh and twentieth days, being sacred to Apollo, were general holidays. Thus the poet gives us a good general idea of the Greek primary school of the fourth century B.C.

One of the earliest records of schools in our own literature is to be found in Chaucer's "Prioresses Tale," and is one which may check the twentieth century's complaisant depreciation of mediæval education so fostered by eighteenth-century writers. The darkness of this mediæval age has been grossly exaggerated, and Chaucer gives us a most pleasing picture of the seven-year-old "clergeon" plodding to and from school, and resolving to perfect himself in singing the hymn "Alma redemptoris mater." Perhaps as portrayed he errs on the angelic side, but, granting this, the "Prioress" shows that she knew something of the "litel scholes" where children were taught

. . . to singen and to rede
As smal children doon in hir childhede.

Daily this little chorister

Sat in the schole at his prymer,

and while conning his own lesson heard the beautiful strains of the "Alma Mater" when it was sung by the pupils. This in itself recalls much; the whole meaning of mediæval life with its ecclesiastical domination suggests itself; moreover, it is a detailed picture of the actual school, and is much more promising than that of the eighteenth-century dame school. At least two grades are mentioned, for the little scholar learnt to read his "Prymer" (not the meagre hornbook of the eighteenth century) at the reading school; but he asks one just out of the "song school" to expound to him the meaning of the hymn. The latter, however, as yet knows but little grammar, for he admits:

I can no more expound in this matere;
I lerne song, I can but small grammere.

The researches of Mr. Leach, in his "English Schools at the Reformation," have thrown much light on the subject. It is interesting to find how numerous such schools were until the Chantry Acts caused their suppression. Often they were combined, as at Northallerton; at other times song and grammar schools were separate, and frequent disputes arose as to when the higher education should begin, for the song or elementary school sometimes infringed on the grammar work. So much for the schools—before the Reformation made such a sweep of education, from which, despite the half-hearted attempts to repair the evil, England was slow in recovering.

Into the schools of Shakespeare's age we can read something very different, for he speaks of the

. . . whining schoolboy, with satchel
And shining morning face, creeping like snail
Unwillingly to school.

And yet this relates to a time when England was in the flood-tide of the Renaissance. Everything testifies to the insatiable thirst for knowledge: it is the age of Dr. Faustus, who would sell his soul to the Devil could he but pass the bounds of knowledge prescribed by Heaven. Yet here, Shakespeare refers to the "whining schoolboy" creeping unwillingly to school. The truth is that the schools did not respond to the new movement, which had its home in the private households of the Mores and Colets of the age. During the first (and largely experimental) stage of the Renaissance this was justifiable, for much was experimental. The great astronomers, for example, had revolutionised accepted theories and might in turn be proved false. Notwithstanding, this does not excuse the lack of response from the universities; and when results had been tested and knowledge of other lands confirmed, and when, in addition to this New World, the Old World had been rediscovered, then surely the schools might have made more response! Hidebound by tradition, they grew more and more out of touch with the spirit of contemporary life. No wonder the steps of the children lagged! At home their elders were discussing the stories of the East and of the West, and inflaming their hearts with the desire to follow in the steps of Drake to "Westward Ho!", while at school they were restricted to the study of the mediæval text-

books and still taught that "logic" (meaning word-fencing) was the height of knowledge. Once this training had been good, but now, divorced from the real living forces of life, it became barren and sterile. Marlowe's "Dr. Faustus" is a speaking criticism of the school and college studies. Listen to him musing:

> Is, to dispute well, logic's chiefest end?
> Affords this art no greater miracle?
> Then read no more.

He asserts that, as taught in the schools and colleges,

> Philosophy is odious and obscure;
> Both Law and Physics are for petty wits;
> Divinity is basest of the three.

Hence he

> . . . that has with concise syllogisms
> Gravelled the pastors of the German Church

will renounce this knowledge, and follow the new, and strive to pass beyond the due limits permitted to the investigation of man.

The passion for "disputation" alone reigned in schools and of necessity in the grammar stages could not pass beyond "word-argument." These "verbal" contests are echoed in many of Shakespeare's plays, for numberless are the arguments on most trivial subjects, and yet all obey the laws of syllogistic form. For example, the conversation in "Twelfth Night" between Olivia and the clown, relating to drink and honesty, sounds to us but amusing word-play, but to the Elizabethan audience it would be much appreciated as an "amusing hit" at the schools. Vives, commenting on Englishmen, says: "They dispute before dinner, they dispute after dinner, they dispute during dinner—in private and public, at all times and in every place," and this passion was the product of the school method. A man became a Bachelor or a Master in Arts, according as he could defend, in argument, certain theses he upheld. Throughout the seventeenth and eighteenth centuries no advance was made, and the schools held aloof from the progressive movements of the age. In "Le Malade Imaginaire," Molière in ridicule portrays a lover who cannot forgo this scholastic habit even when under the influence of love. The lady asserts that "if Monsieur is an honourable man he will be unwilling to accept the hand of one promised to him against her will."

Here is a statement, and the temptation to argue concerning it is too great. At once he assumes the language of the schools and examines the syllogism, accepting or declining each premise as he proves its truth. Even the very technical formulæ are introduced; *e.g.*, Nego Consequentiam; or again, "Distinguo," when he shows ambiguity, to one aspect of which he agrees, "Concedo," but the other he denies, "Nego." What a pedantic lover! and what a sarcastic criticism of the scholastic dogma!

Of eighteenth-century schools we find many accounts. The "village schoolmaster" of Goldsmith is a classic character in our literature:

> There in his noisy mansion skilled to rule,
> The village master taught his little school.
> 'Twas certain he could write and cypher too;
> Lands he could measure, terms and tides presage,
> And e'en the story ran that he could gauge;
> In arguing, too, the parson owned his skill,
> For e'en though vanquished he could argue still.

A most favourable impression is made on the reader, for without being learned the schoolmaster is able to solve everyday problems, and, though a doubtful disciplinarian, wins the love of his pupils.

Of the "dame schools" of the eighteenth and early nineteenth centuries there are many accounts, and these compare very unfavourably with that of the fourteenth century. The education was ineffective, and is satirised by Shenstone in his yet delightful poem, "The Schoolmistress." The picture is not overdrawn, for as late as 1905 inspectors have testified to its truth as a representation of a large class of elementary education given even down to mid-nineteenth century.

> Here dwells in lowly shed and mean attire
> A matron old, whom we schoolmistress name,
> Who boasts unruly brats with birch to tame.
> So now with state she utters her command,
> Eftsoons the urchins to their task repair;
> Their books of stature small they take in hand,
> Which with pellucid horn secured are
> To save from finger wet the letters fair.

While acknowledging the humour of the poem one realises how inefficient the educational work must have been. It reminds us of a nineteenth-century school which Dickens describes as "crowded, noisy, and confusing; half the pupils dropped asleep, or fell into a state of waking stupefaction; the other half kept them in either condition by maintaining a monotonous droning noise, as if they were performing, out of time and tune, on a ruder sort of bagpipe." There was no selection of reading books, but generation after generation was nourished on the "hornbooks," and wandering attention was punished by the birch. Equally sure is reward for diligence, for when

> . . . fear has taught them a performance meet,
> To the well-known chest the Dame repairs,
> Whence oft with sugared cates she doth them greet,
> And ginger bread y-rare.

Thus many references are made to the hornbook and rewards given to children. A very interesting anonymous poem describes a nineteenth-century schoolmistress who

> . . . always wore a green calash,
> A calico vandyke.
>
> The days were all alike to her,
> The evenings just the same,
> And neither brought a change to us
> Till Saturday forenoon came.

And then we had a "spelling match,"
And learned the sounds of A,
The months and weeks that make the year,
The hours that make the day.

Those who are interested in such echoes of school life will do well to read the poems of Crabbe, and Hood's "Irish Schoolmaster," who

Latin, French, and Greek,
All i' the Irish tongue, he teacheth them to speak.

In all the poems the "birch" is represented as playing a prominent part. The efficiency of that sacred tree was never doubted until now, and from the Middle Ages until comparatively recent times it was the insignia of every Master of Arts; when the degree was conferred a birch-cane was also presented to the graduate. In 1784 Dr. Wilson wrote:

The Birch, they affirm, is the true tree of knowledge,
Revered at each school and remembered at college;

for it

Promotes circulation and thrills through each vein,
The faculties quickens and purges the brain.

The secondary education of girls seems to have been little better than that of the dame school. Jane Austen gives a satirical account of a boarding school of the late eighteenth century. "Miss Goddard," she says, "was a mistress of a boarding school," and this was no seminary "where young ladies might be screwed out of health and into vanity for enormous pay," or where it was claimed "to combine liberal acquirements with elegant morality," but an old-fashioned school "where a reasonable quantity of accomplishments were sold at a reasonable price, and where girls might be sent to be out of the way and scramble themselves into a little education without any danger of coming back prodigies." Evidently there was plenty of outdoor life, good food, and when necessary "Miss Goddard dressed their chilblains with her own hands."

Early nineteenth-century schools were little better. The Dotheboys' Hall of "Nicholas Nickleby" is a picture of one type, and, though somewhat exaggerated, yet indicates a miserable state of education. It is not so overdrawn as many think, for Lancashire and Yorkshire were a disgrace to England. The population had rapidly increased; child labour was common, and thousands of children were being bought from the London workhouses. The "compulsory" Education Act of 1802 was opposed, and the House petitioned by northern manufacturers, who denounced it as harsh and injurious. Yet it only demanded such concessions as twelve hours' limit for these children's working day and instruction in the principles of Christianity. Rightly then is Dotheboys' Hall placed in Yorkshire. Dr. Blember's establishment was of a higher order, and here Paul Dombey was enslaved in study, but the "stoniness" of the account makes one realise the enormous gulf between such a school and the Rugby of "Tom Brown's School Days." A great advance in true educational work had been made, and just as in these leading schools a new spirit had manifested itself, so, too, a slower but parallel movement began in each succeeding grade. The claims of each boy to individual care and treatment so noticeable in "Tom Brown" are being more clearly recognised in all schools, and Hughes, by this masterpiece of schoolboy life, has registered that new movement originated in the second half of the nineteenth century by such noble masters as Edward Thring and Arnold of Rugby.

The references given above are but a few of the many to be found in literature. As a rule, they refer to actual school practice, and we need to remember that many of the so-called modern reforms had been advocated long ago by educational thinkers. Mulcaster, Elyot, Milton, and others had advocated the care for physical education which is but now receiving due attention. Cowley, Petty, and Hartlib in the seventeenth century advocated technical training in "trade schools," while many theorists had urged the training of teachers, a theory put in practice by the Jesuits since the sixteenth century. In fact, modern education has to take many steps before it accomplishes many of the aims set forth by these old writers, and before modern literature can reflect a perfect system of education—perfect in the sense that each step is thoroughly good and leads to a still higher state of perfection.

CLASSICS OR ENGLISH?

By A. E. CRAWLEY, M.A.

THE discussion on "compulsory Greek" involves matters more vital than the character of our oldest university, important though that is. Among these are two interdependent questions which, it may be claimed, go to the root of educational theory and practice.

In the first place, since the curriculum of secondary schools becomes more and more extensive, and, with the increase of competition and of accumulated knowledge in all departments, specialisation must begin, if any efficiency is to be attained, many years before the university is reached—what then should be the necessary subjects of a general propædeutic which might serve as an essential preparation for this specialisation?

The other question will assist towards answering the first. If a general and all-round training of the mind is admitted as the chief aim of such a propædeutic, what place, if any, is to be taken in this by the study of foreign languages, whether living or "dead"?

In discussions on university tests, the point is sometimes taken that their object is to secure the possession by candidates of one subject, at least, thoroughly learnt, this being regarded as an essential in education. No mind, that is to say, can be regarded as really educated which has not mastered at least one subject. But one seems to remember another view of the object of a univer-

sity course, namely, that of itself supplying, not merely of supplementing, an education. Moreover, the complete mastery of any subject (to admit for the moment its possibility) is the work of specialised, not of general, education. If we grant the right of any university to demand a fair mastery of any special subject as a test, we come back to the question of the peculiar character or tone of that particular university, a subject which belongs elsewhere.

Taking our second question first, and beginning with the classics, it is clear that, whether regarded as an essential part of a propædeutic, or as a specialised subject of which a "mastery" is much to be desired, their standard as required in university tests is too low. Far too much time, also, is occupied in attaining this low standard. Even when a boy specialises in Greek and Latin with a view to university honours in the subject, the labour expended is out of all proportion to the result. One reason for this much cry and little wool will be suggested below. Meanwhile we cannot withhold the invidious accusation (intended, not as a slur on conscientious teachers, but as a point against a traditional system which follows the line of least resistance), that of all subjects ever taught in schools, Greek and Latin, as hitherto taught and still taught, perhaps inevitably, are the easiest of all subjects, both for teacher and taught, with which to "mark time." As things now are, to quote a remark of Mr. A. C. Benson, "many boys at public schools are learning simultaneously three languages besides their own [*sic*], Latin, Greek, and French, with the result that at the end of their time they know neither Latin, Greek, nor French." I have ventured to express my surprise at the words "their own," for that language is precisely the language which they do not learn, the result being that at the end of their time they know less of it than they do of the Latin, Greek, and French which they do not know.

In this connection much is claimed for the Frankfurt system, which is said to produce more and better Greek and Latin in less time. But the reason for this is by no means the fact that French is learned before Latin; it is solely the fact that the classics are *postponed*, and that, in Germany, real attention is paid to the vernacular. If the latter absorbed the time devoted to French, this foreign tongue could be learned in a term, if properly taught, and the Greek and Latin would be further improved.

Here we reach the root of the matter. The superstition—for it is nothing else—that a foreign language is an essential part of a propædeutic or of a general education, has acquired a limpet-like hold on the mind of the educationist. Some day it will be recognised that there is nothing in the psychology of education to countenance this early insinuation of an "elegant" accomplishment, or "commercial" asset, or "mind-broadening" *Cultursache*; that, on the contrary, everything points to the conclusion, not only that the learning of a foreign language during the period when the vernacular is "setting" (it has never yet been taught), is injurious to the acquisition of the vernacular, but that it is actually injurious to the development of the mind.

The general foundation or propædeutic should obviously, on both psychological and economic grounds, comprise at least elementary mathematics and science, and English. The two former need still much reorganisation; the latter has not yet been scientifically organised at all, nor is its mental importance even realised, much less is any method yet employed other than a makeshift or a fad. Even its elements, reading and writing (in the narrower sense), are regarded as a work of supererogation in secondary schools; "they should be learnt before" is the usual cry. But even if "learnt" before, they should not be discontinued when secondary education begins. As a matter of fact, reading is rarely learnt, either before or during the secondary-school course. The chief reason for this result is the fact that English, other than reading, is not taught, and what is picked up is not improved. A correspondent in *The Times* happily suggests, as regards the other "element," that handwriting should be the test at Oxford instead of Greek.

Now as to the "teaching" of English at present carried on, in the first place, the teacher rarely knows his own language, though he may be learned in Middle English or even phonetics, while the teachers of other subjects invariably, when they do complain, put their finger on the offending spot. They notice, that is, that the pupils cannot express adequately the simplest ideas, concepts, or logical series. Such aims, therefore, as cultivating the "literary" sense or the "sense of style" (whatever these may be) are mistaken. The chief aim, from beginning to end, should be to teach the pupil the capacities of his own linguistic mechanism, and of the vernacular material which it employs, and which helps to form it.

The curious notion that vernacular expression in speech and writing can take care of itself dies hard. It seems to be a survival of the mediæval prejudice against the use of the "vulgar tongue," except for vulgar purposes. The practical consequence is that the average man, however liberal his education, has a very real difficulty in expressing his ideas, concepts, and logical series, not to speak of his feelings and imaginative products, if any, in written or spoken English with either completeness, accuracy, or variety. If he has been soaked in other languages too early, his difficulty is really greater, though it is apparently extenuated by the rhetorical and logical experience supplied, for instance, by the classics. This experience is in itself injurious, and the English thus helped out is an intellectual mongrel.

It is obvious that both for the general student, and for the specialist, whether in classics, or modern languages, or literature, or science, or mathematics, a thorough education in English would be of inestimable value. Both the acquisition of any of these, and the attendant expression and recapitulation of progress attained, not to

speak of the understanding of new steps—for the mind which does our thinking in these subjects not only thinks most efficiently in the vernacular, but is more able to cope with subjects taught in the vernacular—all these results would be quickened and improved.

A plea for the recognition of real English teaching as the nucleus of that cell of education with which all specialised products are continuous, may be justified on psychological and on economic grounds. One species of the latter has recently brought Germany unconsciously to make the vernacular a central point in her propædeutic. This species is patriotism.

But, above all, such a plea must have a practical suggestion behind it. Mr. A. C. Benson, in a letter to *The Times*, asks, "Has any educationist a really practical scheme for education in English? I have never been able to discover one. Is it to include Old and Middle English? Is it to be Chaucer with philological notes, or 'The Old Curiosity Shop'? Is it to include précis-writing?" Mr. Benson's irony is justified by English as she is now taught.

A practical scheme could soon be formulated if the principle is taken as a guide that an education in English should aim first and foremost at *the expression of thought* and reproduction of facts learned, or experienced, *in English*, with the corollary of *understanding English* as an expression of thought. The point of origin should be the mind of the pupil himself and what he learns. Subsidiary English, such as grammar and logic, philology and literature, will fall into their proper places at the proper time. How much or how little of these is essential for a general English training of the propædeutic sort is a question not to be settled until we have that book on the dynamics of English as a mode of thought which is not yet written.

In a propædeutic consisting, roughly, of one-third English, one-third science, and one-third mathematics, English would, of course, enter largely into the two latter subjects, as their necessary vehicle. One could profitably occupy ten hours a week for five years, say from nine to fourteen, in pure English, without any fear of dullness, or vain repetition, or "marking time."

An English thus grounded, and continued during the school-period of specialisation in classics, modern languages, science, or mathematics, and tested in these subjects themselves, might well be selected as a university test. It might even improve the English language.

The "Century" Exercise Book of Anglo-Welsh History. (Manchester: Galt.) 6*d.* net.—This is a series of blank pages ruled so that the pupils may, in imitation of a fully printed page at the beginning, fill in the events of Welsh and English history on opposite pages of the openings, which range from prehistoric times to the sixteenth century. These are followed by seven outline maps of England and Wales, intended to be filled in with the names of places important in various periods. We think it would be useful to classes in Welsh schools.

PERSONAL PARAGRAPHS.

ONLOOKER is pleased to see that a contemporary of his, Mr. Reginald Carter, rector of Edinburgh Academy, has been elected headmaster of Bedford Grammar School in succession to Mr. J. E. King. Mr. Carter was educated at Clifton College, won an exhibition at Balliol in 1886, was *proxime* for the Hertford in 1887, took a first in Classical Mods in 1888, the Gaisford Greek Prose in 1889, and a second in "Greats" in 1890. He was elected to a fellowship at Lincoln College, and served as classical tutor there from 1891 to 1901. One remembers a powerful, vigorous, light-haired man coaching the Lincoln boats about that time. During his principalship of the Oxford Day Training College I lost sight of him, and he next came across my line of vision in 1902, when he was appointed rector of Edinburgh Academy.

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I HEAR that Mr. R. W. Hogg, a mathematical master at Christ's Hospital since 1887, retired at the end of last term owing to unsatisfactory health. He was educated at Durham School under Canon Henry Holden, took a mathematical scholarship at St. John's, Cambridge, and was bracketed sixth Wrangler in 1883. He was a fellow of his college. He was one of three selected candidates for the head-mathematical mastership at City of London School, when Mr. Hill was elected. He was always popular with boys and colleagues, and his retirement is much regretted.

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THE REV. H. D. PERROTT is shortly retiring from the headmastership of Coventry Grammar School, where he has greatly increased the numbers and improved the financial position. He has accepted the Duncombe lectureship at Kingsbridge, South Devon.

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Two schools, Harrow slightly and Radley considerably, are concerned in the death of the Rev. Charles Martin, who recently died at the age of sixty-nine. He matriculated at New College in 1859, took a second in Mods in 1861, and won the Stanhope historical essay prize in 1862. A first in Lit. Hum. in 1863 was followed by a senior studentship at Christ Church, where he was tutor 1865–9. After a short period of service as a master at Harrow, he was appointed in 1871 vicar of Radley and warden of St. Peter's College, and remained in these positions for eight years. He subsequently held three different benefices.

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MR. H. E. HAIG BROWN, of Lewes, who has served the East Sussex County Council since 1903, has been elected County Inspector of Education to the Surrey Education Committee.

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MR. ARTHUR JOHN BUTLER, professor of the Italian language and literature at University College, London, recently died in his sixty-sixth year. He was educated at Bradfield and Eton,

and went to Trinity, Cambridge. In 1864 he won the Bell scholarship, and was eighth classic and a junior optime in 1867. These successes brought with them a fellowship at Trinity. For seventeen years from 1870 he was in the Education Department, and then for seven years engaged in the publishing business. In 1894 he was Assistant Commissioner to the Royal Commission on Secondary Education. He was probably best known for his studies in Dante. Perhaps most worthy of mention is his edition of the "Divina Commedia," which has been used by many English readers. Two other useful works were his "Dante: His Times and his Work," and a translation of Scartazzini's "Companion to Dante."

* * *

Last month I recorded the death of a well-known Dublin man, Mr. Purser. The death is now announced of another professor who took a prominent part in the literary and social life of Dublin. Dr. Edward Perceval Wright died at the age of seventy-six, at Trinity College, where he had a distinguished career in science as a young man. In 1857 he was appointed director of the University Museum and lecturer on zoology. In 1867 he was a member of the scientific expedition which investigated the flora and fauna of the Seychelles Islands. In 1869 he was elected to the chair of botany, which he occupied until 1904, when he resigned, and was succeeded by Dr. Henry Dixon. He wrote many memoirs on scientific subjects, and co-operated with Prof. T. H. Huxley in a memoir on fossil vertebrates from the Irish coal measures.

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To the Sadlerian professorship of pure mathematics at Cambridge has been elected Dr. E. W. Hobson, F.R.S., fellow and tutor in mathematics at Christ's College. He was senior wrangler in 1878, and has been Stokes mathematical lecturer since 1884. He has published a great amount of work, and the Universities of Dublin and Manchester have conferred upon him the honorary degree of Doctor in Science. The Royal Society conferred on him a Royal medal in 1907 for mathematical research. He has been appointed this year's president of the section for mathematics and physics of the British Association.

* * *

Perhaps if I were living in America I should not think fit to make special mention of the recent donation of Mr. Joseph and Miss Cowen to the endowment fund of the new chair of English literature and language in Armstrong College. A donation for this purpose is, in these days and in England, a handsome aid to educational purposes. Conditions of the gift were that the professorship should not be of less value than £500 a year, and that an annual prize of £5 be given for an essay to be called the Joseph Cowen prize. The former condition is well worth making. Underpaid professors is a cry of the times, and it is to be hoped that the conditional minimum will be doubled for the first holder of a chair that ought to be as important as any.

Another of the Assistant Commissioners to the Royal Commission on Secondary Education (1894) has just died in the person of Miss Catherine Lucy Kennedy. She was appointed headmistress of the Leeds Girls' High School at the age of twenty-five in 1876, and served there until 1891. She then took up the reins of the St. Elphin's Church of England School, first at Warrington, and afterwards at Darley Dale, near Matlock. Her influence, as well as that of Archdeacon Wilson, was largely instrumental in effecting the change to the beautiful quarters at Darley Dale. Her ability, the intensity of her work, and, above all, the depth of her religion gave her an extraordinary power over her pupils. She is deeply regretted in the three dioceses of Manchester, Liverpool, and Chester. She was the daughter of the late Rev. W. J. Kennedy, vicar of Barnswood, and his Majesty's Inspector of Schools, and niece of Dr. Kennedy, headmaster of Shrewsbury School.

* * *

The new headmaster of Wellington College is to be Mr. W. W. Vaughan, at present headmaster of Giggleswick Schools, Yorks. He is the son of Mr. Henry H. Vaughan, a former professor of modern history at Oxford, and was born in 1865. He was educated at Rugby and New College, where he took second classes in both moderations (1885) and Lit. Hum. (1888). If the governors of Wellington held the exaggerated estimate so often held of the value of the hall-mark of university degrees, we may suppose they would not have elected Mr. Vaughan to fill so high a position as the mastership of Wellington. Happily, however, wiser counsels have prevailed. It should be a truism that many a first-rate man has taken one or even two second classes. Mr. Vaughan studied also at the University of Paris. He was an assistant-master at Clifton from 1890 to 1904, when he was appointed to Giggleswick. He married a daughter of the late John Addington Symonds.

Onlooker.

ENGLISH LITERATURE.

Though the Victorian era is ended, and the most cursory glance at new books in any department of creative literature is enough to remind the elderly among us that it has passed away more completely as well as more speedily than we could have foreseen, it is doubtful whether we have yet reached with respect to it the moment foreshadowed in Matthew Arnold's "New Age"—the moment when "the world is still" and

> The one or two immortal lights
> Rise slowly up into the sky
> To shine there everlastingly.

The truth is that the world is never "still," and herein lies the difficulty of arriving at any final estimate. No such estimate is reached or attempted by Dr. Hugh Walker.[1] Indeed, if one

[1] "The Literature of the Victorian Era." By Dr. Hugh Walker. viii+1068 pp. (Cambridge University Press.) 10s. net.

is to carp at his book at all, it must be on the ground that he does not help us quite sufficiently to distinguish the "one or two immortal lights" from the crowd of feebler and more transitory luminaries; that he is, in a sense, inconsistent with himself in allotting space to those on whose behalf he makes no claim to greatness. But even this fault has its advantages. It recalls a multitude of names and works that had significance in their own generation, and it leaves his book the most comprehensive one-volume survey of English literature in the nineteenth century that has yet appeared.

All Dr. Walker's verdicts give the impression of being based on a first-hand acquaintance with the authors treated of, so that the mere width of his reading is something in itself to compel admiration. But he has finer qualities besides—a catholicity of appreciation and judgment, and lucidity and pleasantness of style; though an occasional diffuseness and tendency to repetition is also to be remarked, due, perhaps, to the method appropriate to the lecture-room. Space may be found here for two out of many admirable dicta: "The whole substance of Arnold's thought [in his poetry] is modern; but he is Greek in his insistence that there shall be a definite thought, which shall be lucidly expressed." "Newman's Gerontius really leaves the body; Rossetti's Damozel is embodied still in Paradise." In the placing of minor poets, personal preferences count for so much that there can be no satisfying of critics. May one hint, nevertheless, that Dr. Walker has given less than due space to Aubrey de Vere, Frederic Myers, and T. E. Brown (as a *lyric* poet), and rather more than enough to Edwin Arnold, "Owen Meredith," and Davidson?

Mr. A. W. Verity's editions of the separate books of "Paradise Lost" have enjoyed so long and so honourable a career in our schools that any lengthy description or commendation of the one-volume edition of the whole would be superfluous in an educational review.[2] The new edition is, however, something better than a reprint: "all the editorial matter has been set up afresh and much of it recast," and there are numerous additions. Industry, scholarship, and taste have all gone to the making of this commentary, and the result is a volume that for some years to come will be indispensable to the student of Milton. If Mr. Verity ever errs, it is just in those cases where, in dealing with the blind poet who dictated his verses, an instinct for rhythm and a knowledge of the classics are safer guides than a study of the punctuation of early editions. For example:

> All is not lost: the unconquerable will,
> And study of revenge, immortal hate,
> And courage never to submit or yield,
> And what is else not to be overcome.

is so distinctly finer than

> And what is else not to be overcome?

that we may disregard the weight of printer's authority in favour of the latter reading. Here Mr. Verity, whose admirable remarks on Milton's rhythm attest his competence on that side of criticism, allows his judgment to be overbalanced by his learning, and pronounces for the note of interrogation.

[2] "Milton: Paradise Lost." Edited by A. W. Verity. lxxii+750 pp. Cambridge University Press.) 7s. 6d. net.

THE TEACHING OF CLASSICS.[1]

THE buff book now before us is one of the most important of the "Special Reports on Educational Subjects." It contains three papers: one by Mr. J. W. Headlam, whose work as an inspector has been most valuable in the interests of liberal education; one by Mr. J. L. Paton, High Master of Manchester Grammar School; and a third by Mr. F. Fletcher, Master of Marlborough. The views they represent are therefore quite divergent. Mr. Headlam regards his subject from the official point of view; Mr. Paton is known as a highly capable headmaster, of wide experience, and a supporter of thoroughgoing reform; while Mr. Fletcher may be taken as representing the conservative view of the public schools.

The last two sections were printed some years ago, and widely circulated; their contents are probably known to most of our readers, and we may be content with a brief summary. Mr. Fletcher takes the comparison of German and English schools. He finds few and slight differences in the time-table of the upper forms, but a considerable difference below; the English practice is to begin Greek and Latin earlier, and without a definite interval between them, in both which points he thinks that Germany has the advantage. In the top form England has the advantage in range of reading and in composition. The national system of Germany has the advantage in the uniformity of schools; but they have too much system, as we have too little. Mr. Fletcher is not blind to the bad effect of our examinations, especially those for open scholarships, and the neglect of training in English. His remarks carry more weight since his prejudices are on the other side. Mr. Paton describes in detail the aims and methods of German teaching. He specially praises the wider and more definite aim of the German, which is not so much to master the intricacies of language as to drink in the spirit of the past and to understand its being. The German also has a definite and co-ordinated scheme of study, in which the parts are meant to be in due proportion; this is wholly lacking in English schools, where different subjects struggle one with another for precedence, and the scholarship examinations with their extreme specialisation dominate all.

We give, as one of the most important passages in the book, the remarks on the co-ordination of knowledge:

> It is recognised that Latin cannot stand as a subject by itself; that which is isolated has no mental adhesion. Every new addition to knowledge must be linked on to

[1] "The Teaching of Classics in Secondary Schools in Germany." Special Reports on Educational Subjects, vol. xx. vi+172 pp. (Wyman.) 9½d.

the ideas already subsisting in the mind. The pupil who is to be introduced to a new subject always brings with him a certain stock of knowledge which bears some relation or other, however vague, to the new subject. The teacher's first duty, therefore, is to bring into the mental focus by skilful questioning those ideas which are serviceable for the new acquirement, and take care that with each fresh acquisition the closest connection is established both between the new ideas in themselves and between them and the knowledge previously existing.

To this psychological theory of apperception more regard is paid by teachers of Latin in all German schools than with us, because all teachers are trained, and, so far as the theory of apperception is concerned, all teachers are Herbartian. In the reform schools, the boy of twelve to thirteen years brings to the new subject of Latin a far larger stock of ideas than the nine-year-old Sextaner of the unreformed school. He has learned his grammar thoroughly from the instruction in the mother-tongue. In Sexta he has learned to decline and conjugate, and thereby has obtained clear notions of case and person and mood and tense: he has learned the parts of speech and the parts of the simple sentence, working out the latter with the finite verb as his starting-point; he has learned to distinguish the adjective used as predicate from the adjective used as attribute, and knows the other different methods of expressing attribute; he has learned the difference between the direct and remoter object and the various kinds of adverbial expression. In Quinta and Quarta he learns the structure of the compound sentence, he learns how to mark off subordinate sentences by punctuation and how to classify them in their relation to the principal sentence according to the part of speech which they replace or the part of the sentence to which they belong; all this is drilled into him by constant practice in sentence analysis and sentence construction, so that his different grammatical categories are clearly defined in his mind.

Moreover, he has had three years' experience already with a foreign language; he has been taught French as a living language, not as though it were a matter for the deaf and dumb. He has acquired hereby plasticity of mind and power of expression, and to regard translation, not as a matter of substituting certain words for certain other words, but as a reclothing of thought in another dress. The child's first introduction to the idea of a foreign language is of the greatest importance to its linguistic education later on. If it begins with a language so remote from its own experience as Latin, the first impression of language is apt to be one of "dead words." But with French taught on the reform method the impression is quite different; the foreign language is a way of expressing experience or feeling.

On this basis of grammatical knowledge and this experience of a foreign language the teacher can base his first instruction in Latin. Not only so, but the boy has had in Quinta a careful selection of stories from the mythology and heroic legends of Greece and Rome; this has been followed up in Quarta with a one year's course in Greek and Roman history. The Untertertianer knows, therefore, who these Latins are whose language he is going to learn, and is able to link up what he learns in organic sequence with what he has already learned.

The result of this careful preparation, or propædeutic, is that in one year's intensive work at Latin the teacher is able to cover the ground which would have taken between two and three years had he begun at nine instead of at twelve. The boy of twelve thus prepared is ready to reason; he has an idea of system and law, he can generalise and arrange his knowledge methodically in his mind, he learns his accidence more rapidly because he grasps the underlying principle of word-formation and modification; he does not need to have an "easified" Latin book about donkeys and hoops written down to his level; he starts at once with real Latin sentences, and feels his way gradually, without losing his foothold, into the construction of the different cases and subordinate sentences.

The results of this careful preparation are astonishing. An average class begins Caesar in its second year, and in the course of the year reads the first five books through and selections from Book VI., together with 700 lines of Ovid. The same teacher, who does this with his second-year Latin class on the reform system, tells us how, working under the old system, and beginning Caesar in the third year, he took the whole year slowly ploughing his way through the first book.

One point Mr. Paton notes with particular praise: the air of life and attention about the German class-room. He is even inclined, it seems, to be pleased with one practice which is crude in the extreme: the boy in uttering a Greek word makes the sign of the accent with his hand. Oral work forms a large part of the German practice.

We now come to Mr. Headlam's paper. He begins with a historical sketch of classical work in German schools, the various reforms that have been carried out, and, lastly, the reform of Dr. Reinhardt. He states and criticises the chief regulations by which the teachers are governed. Like Mr. Fletcher, he finds that certain authors of first-rate importance are neglected; others, on the contrary, are more profitably studied than in England. Thus of Homer he says:

> Of him, indeed, the boys take away a true and abiding knowledge, and many of the masters have spoken to me of the value which this is to their pupils. Brought up as they are in an artificial civilisation, it is from Homer alone that they get knowledge of the natural and primitive life of man.
>
> More than this, this knowledge of Homer, studied as it rightly is in connection with the great German epic, will necessarily alter their whole conception of epic poetry. They leave school having learnt all that school can teach them of this great department of human creative power. They have gone to the fountain-head; they have no second-hand, incomplete, fragmentary knowledge. They have in this got what a study of Greek, and nothing else but Greek, can give.

In dealing with the aims of the German teacher, Mr. Headlam offers a reasoned defence of the study of classics which deserves the attention of all, not of classical teachers only, but even more of those who attack the study. We quote his remarks:

> Surely if Greek is to be studied it is not because of its historical effect in the past, but because it still has the same power as it had then—the virtue is not gone out from it. We read Greek books, not because our fathers read them with pleasure and profit, but because we derive profit and pleasure from them ourselves. If we do not—if we can find other books which are equally good, if our modern civilisation is deeper, wider than that of Greece, if our modern poets express more perfectly the emotions of man, if our modern philosophers see more

clearly the fundamental problems of life, if our modern historians have more art in the record of political events and more insight into public life—then it is indeed inexcusable that the best years of a boy's life should be given to so laborious, so expensive an operation as learning an extinct and superseded literature.

How infinite is the field of knowledge and thought opened to a clever boy who has at last attained some command of the language and can read with ease and speed! It is not only politics and literature to which he gains an unrivalled introduction. Here he finds the first conscious attempts of the human intellect to probe the laws and conditions of its own activity. Is it the origins and history of human society? Surely he will gain from Homer and Herodotus, from the study of early Spartan history and Rome. Is it the deepest problems of ethics and conduct? Where is a better introduction to them than in Xenophon and Plato, Cicero, Marcus Aurelius, and side by side with them the New Testament. This is not dead and barren knowledge: the transition to the problems and interests of the present is always there; it cannot be avoided. It is but a step from Tartessus to Potosi, from ancient Syria to modern Egypt; and where can we better train our boys to understand the endless struggle between liberty and empire than in Carthage and Rome? What is that which causes one of the most distinguished of German schoolmasters to speak of the "*schöne Primaner Jahre*"? What is it that gives the peculiar tone and strength to a strong, well-taught sixth form? It is the unconscious feeling of intellectual growth and energy arising from the willing and pleased absorption in the noblest works of letters and the greatest of intellectual problems. It is the freedom that comes from work without restrictions, the margin of time.

Intellectual growth is not in proportion to the amount of varied knowledge acquired or encyclopædic information; it depends on the sense of power arising from the complete mastery of the subject.

Mr. Headlam finds the Prussian system wanting in this respect; but we do not dwell on that point, since our lesson is different.

A detailed account and criticism follow of the famous Frankfurt experiment. In comparing this with English schools, Mr. Headlam puts his finger on the crucial points where we greatly need reform. He sees the advantage of spending all one's life at one school, the impossibility of the best work with a great break at thirteen or fourteen; the imperative need for a scheme of work without a break, in which "each step is carefully prepared," and methods which mean hard work, but yet enable the boy to cope with it and to feel that he is able to do so. He also sees that training in English is a necessary preliminary to classical work. In the course of his criticism he breaks a lance with those who wish—or whom he supposes to wish—to use Latin and Greek as mediums for describing modern things. Like Mr. Paton, he sees in oral work a precious help to study, neglected in England; and he sums up the two nations thus:

> In England the chief object of the work in school has been disciplinary; the master finds out whether the boy has learnt his lesson. In Germany it is educational.

From our summary it is easy to see in how many ways the report bears on our own problems. We have not been able to touch on them all, and the whole book should be read to appreciate its careful and cogent reasoning. With the Headmasters' Conference at last stirred[1] to take the preliminary measures for a step which may some day be actually taken in practice, this book may exert a real influence on our future course. We hope it will.

THE TECHNIQUE OF TEACHING.[2]

THE many readers of Prof. Adams's well-known book on Herbartian psychology will rejoice to hear that he has found time to write at greater length upon the technique of teaching. At the same time it will be fair to warn them that they will find the new book a less toothsome morsel than the older one, partly because there are two or three chapters of a purely abstract character and partly because the whole analysis of the processes involved is much finer. The distinctions are not always easy to follow, the argument is at times involved, and the illustrations are sometimes less obvious in their appeal than those which make the pages of the earlier book a joy to read.

In the more theoretical and abstract chapters dealing with mental content and mental activity, not a little difficulty faces the student owing to what looks like an effort on the part of Prof. Adams to explain away his Herbartian attitudes. He tells us that it is only occasionally permissible to speak of ideas as forces acting and reacting upon each other, but he seems at times to make too free a use of a permission so grudgingly given. We read that "each new idea is acted upon by all the others at that time available in the mind in question," and that this process is called apperception; that ideas are "not so much things as forces"—"forces that have brought the mind into touch with something outside itself," though these forces are "not independent forces"—"they never act upon the mind." And, again, we are told that ideas "possess a certain degree of presentative activity" which is "defined as the power to force an admission into consciousness." Moreover, "every idea that has ever been in consciousness has by that very fact acquired a certain degree of this activity, and this amount is increased every time the idea finds its way back into consciousness." The critical reader will ask what the idea was before it ever entered into consciousness and acquired this extra something in consequence of its good fortune. Metaphor of the kind is so misleading that most modern psychologists are at great pains to avoid its use.

In his chapter on presentation, Prof. Adams seems almost to countenance the prevalent error which supposes the five formal steps of the modern Herbartion to be a simple restatement and expansion of what the master himself called clear-

[1] Unfortunately, this sentence now appears premature; the movement has evaporated in talk.

[2] "Exposition and Illustration in Teaching." By Prof. John Adams. ix+426 pp. (Macmillan.) 5s.

ness, association, system, and method. Herbart was not thinking of the teacher at all when he put these words at the head of a section of the "Allgemeine Pädagogik," but of the way in which the content of the individual mind progresses. Ziller's analysis of the process of instruction was, of course, suggested by Herbart, but the change of attitude has wrought not a little mischief, and we may hope that the formal steps play a smaller part in the training colleges than they did ten years ago. The most obvious result has been to mistake words for knowledge. The generalisations of the immature are usually best left unformulated, and to substitute ours for theirs is not infrequently a hollow mockery. We are persuaded that Herbart himself would have disowned very much of the work done by teachers in his name.

In the practical parts of his book Prof. Adams has much to say that is at once interesting and stimulating. He has not only watched teachers, he has been a teacher himself, and the keen-sighted schoolmaster is everywhere to the fore. Perhaps he indulges too freely in his love for a story; so much so that one feels the book has grown rather longer than he really meant it to be. He occasionally leads us into illustrative asides that are so interesting in themselves as to divert our attention from the actual argument, thereby, we fancy, offending against his own canons. Yet, unless the reader is in a hurry, he will not greatly mind.

The chapters on illustration show the author in his happiest vein. The subject lends itself to light and, at the same time, severely critical treatment. Practical teachers of every grade will find much that will throw new light upon their work. Prof. Adams pleads guilty to a *penchant* for technical terms. He offers several new ones which will meet with very unequal approval. *Illustrandum, expositandum, confrontation,* will not, we think, be so attractive as *inference point, threshold of stun,* the *principle of the vacuum.* These last really illuminate the ideas for which they stand.

As a practical teacher, the writer cannot close this review without an expression of gratitude for the closing chapter of the book. The catalogue of appalling pitfalls that beset the practitioner would have been too depressing without these last words of comfort to ordinary classroom workers. The book, taken as a whole, will surely add to the reputation of its distinguished author.

Arnold's Composition Lessons. Six books; illustrated. (Edward Arnold.) 2*d.* each.—The first three books of this series are intended to provide systematic drill in sentence formation upon everyday subjects; the compiler mentions in his preface that many of the exercises are adapted for oral working; in our opinion the work at this stage is not likely to benefit by placing a book in the children's hands at all. The last three books, without being particularly stimulating, may be found useful in junior classes for revision after oral work, inasmuch as, despite their title, they are really *language* lessons, and provide suitable practice for driving home elementary language ideas.

SOME NOTES ON THE FITTINGS FOR SCIENCE LABORATORIES.[1]

By W. E. Cross, M.A.

Headmaster, King's School, Peterborough.

It is, of course, impracticable within the compass of a short paper to deal in detail with all the possible methods of arranging the laboratory furniture, and still less possible to discuss details in connection with fittings of a special kind, since so much depends upon the size of the rooms provided, the number of classes intended to occupy them, and the nature and standard of the work proposed. In spite of this, however, there are certain general principles to be observed, and the neglect of these may lead to the production of a laboratory, apparently perfect on a cursory inspection, yet so defective that to conduct ordinary work therein is a matter of considerable difficulty; or else, as has been the case in one or two laboratories which have recently come under my notice, the system adopted, while admirably suited at the time it was planned to meet existing needs, was subsequently found to be wholly incapable of expansion or modification when new circumstances arose.

It is with this latter point, namely, expansibility, that I propose to deal chiefly, and to consider a few important questions of laboratory planning and equipment from the teacher's rather than from the architect's point of view. Diverse as would be the opinion of teachers as to the position of benches and the choice of fittings, all would probably agree that no effort should be spared to attain the following five objects:

(i) The laboratories should be capable of expansion and modification.

(ii) Fittings and furniture should be so planned as to be cleanable with a minimum expenditure of labour.

(iii) Fittings should be so disposed around the room as to minimise the unavoidable movement of pupils.

(iv) The arrangement of benches, &c., should ensure ease of supervision on the part of the teachers.

(v) The storage accommodation should be ample and wall space should be left for additional fixtures.

These five considerations should be constantly kept in view, and no fitting should be introduced which, to any great extent, tends to subvert them.

Structural Points.

I will first deal with one or two points concerning the general structural nature of the building.

The laboratories should be lofty, and either top-lighted or the side windows so planned that the bottom of the sash is at least 6 feet from the floor; by this means no wall space is wasted, and the light is better diffused.

The walls should be wood panelled to a height of 6 feet to enable all apparatus and shelves to be easily fixed and easily moved; the glazed tiles so often employed, though admirable so far as light and ease of cleaning are concerned, are almost fatal when change of fittings are required.

In addition to the ordinary green canvas blinds, perfectly light-tight blinds of the roller-shutter type should be fitted to all windows, or at least to those in the physical laboratory and lecture-rooms, so that these can be readily darkened, as is so often necessary in physical work.

Great care must be taken that the systems employed for opening and closing the windows and for controlling the blinds are simple, efficient, and easy of repair.

[1] A paper read at the annual meeting of the Association of Public School Science Masters, January, 1910.

It is perhaps superfluous to remark upon the necessity for perfect rigidity in the flooring, the ordinary system of joists and boards being quite inadequate.

The question of space will be dealt with when the question of benches is discussed. It is enough to say here that most laboratories are too small for the numbers intended to work in them.

Chemical Laboratory.

Bench Arrangements.—Fig. 1 shows a suggested arrangement for a chemical laboratory for twenty-four students, the double-bench longitudinal system being followed. To give this system its full advantage, the room should not be smaller than 44 feet by 32 feet. Fig. 2 shows an alternative plan for classes of the same size. Three double benches are arranged transversely, and each bench accommodates eight students. This arrangement is slightly less economical of space, and requires a room 48 feet by 32 feet.

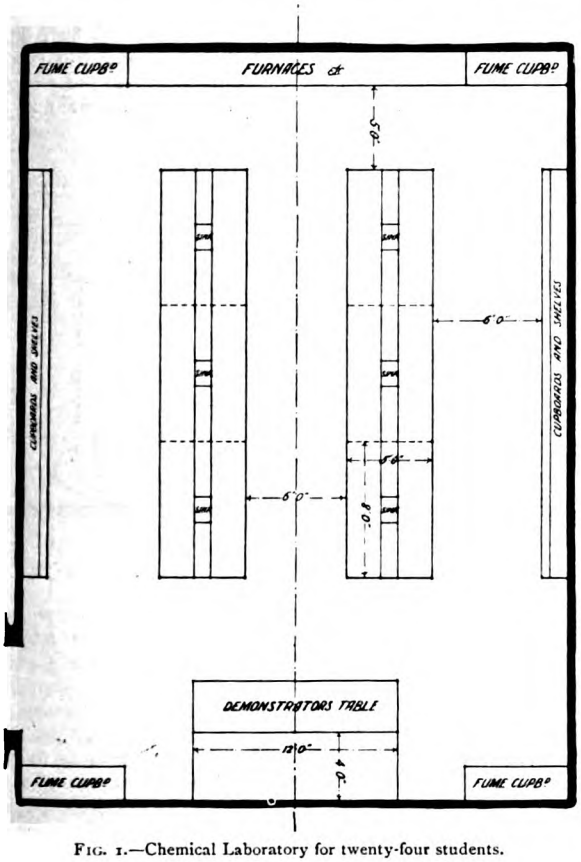


Fig. 1.—Chemical Laboratory for twenty-four students.

Single benches have the advantage that all students face the same way, and so are under better supervision; but they are very extravagant as regards space.

Wall benches are wholly bad and should be rigorously avoided. The only possible excuse for employing them would be in cases where space is extremely limited. They entirely obliterate wall space, and leave no room for cupboards and other fittings.

Each pair of students will require a minimum bench space of 8 feet by 2 feet or 2 feet 2 inches, or, if they work singly, of 5 feet by 2 feet or 2 feet 2 inches.

Gangways between benches where two students work back to back should not be less than 6 feet. For a single row 4 feet will suffice. A considerable space should be left clear in front of the demonstrator's table, affording room for the students to assemble to receive, collectively, any remarks from the demonstrator.

Symmetry.—It is a decided advantage if perfect symmetry of arrangement can be secured, as it is an aid in securing the orderly issue and disposal of apparatus and reagents, and reduces the need for movement in the laboratory. Thus the bench sinks in Figs. 1 and 2 are common to four students, and provide precisely similar accommodation for all. Again, the fume cupboards for general use, as shown in Figs. 1 and 2, are symmetrically disposed, so that each student would know which he is expected to use. For the same reason reagent shelves, other than those on the benches themselves, should be placed sym-

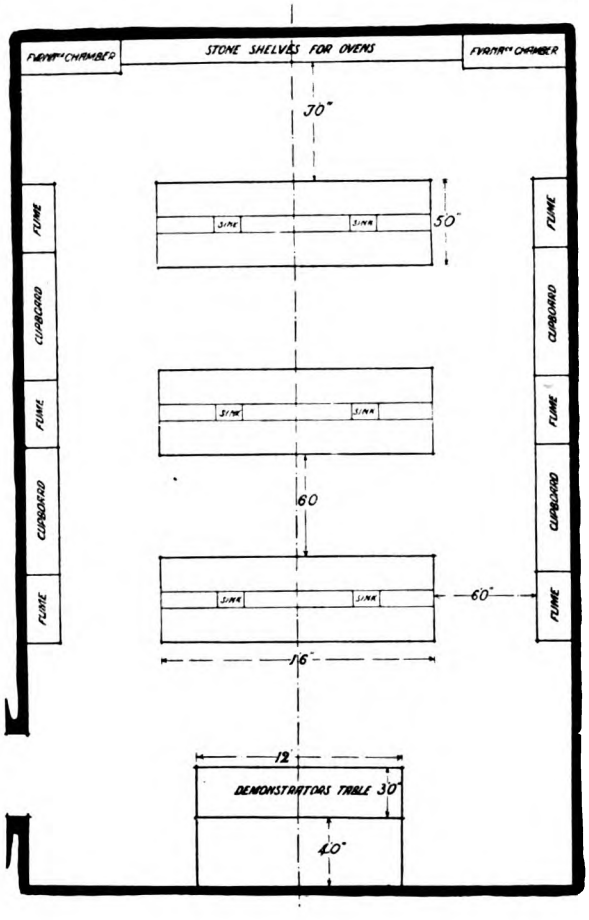


Fig. 2.—Chemical Laboratory for twenty-four students.

metrically about the room, and not all collected into one position, so that no student has to move far to secure any reagent he may require.

With regard to the detail of the bench fittings, each pair of students should have at hand one water nozzle fixed about 2 feet above the level of the sink, one side nozzle for filter pumps, &c., four gas nozzles, terminals for electric current, one balance (in a solid and well-made case), a small portable receptacle for rubbish (broken glass, &c.), and 6 feet of shelving for reagent bottles.

It is a good plan to recess all gas nozzles, water nozzle for condenser, electricity terminals, &c., under the reagent shelves, raising them on a wood fillet from the bench-level. The working space is thus entirely unencumbered, and

glass apparatus is not liable to be broken by being pushed against a projecting gas nozzle. The balance case can be on a shelf above the reagent bottles, or arranged in a convenient position around the walls. The latter is preferable, provided it does not entail much movement on the part of the students. This can be more easily effected under Fig. 2 than under Fig. 1.

In planning the lockers beneath the bench, some regard should be paid to the maximum number of classes likely to use the laboratory. Thus if five different classes are to use the room, each 8 feet of bench should contain five lockers.

Drainage and Traps.—The central V-shaped trough is probably the most satisfactory. The bench sinks are usually trapped, but I am inclined to think that with a wide-bore pipe, drainage is more thorough and rapid when traps are not used. Obviously Fig. 1 renders drainage simpler than does Fig. 2.

I think it advisable to give a word of warning against using benches of the stock patterns supplied by most of the firms of laboratory furnishers, as, with some few exceptions, those that I have seen are fundamentally faulty in design; sinks are placed so as to obliterate much bench

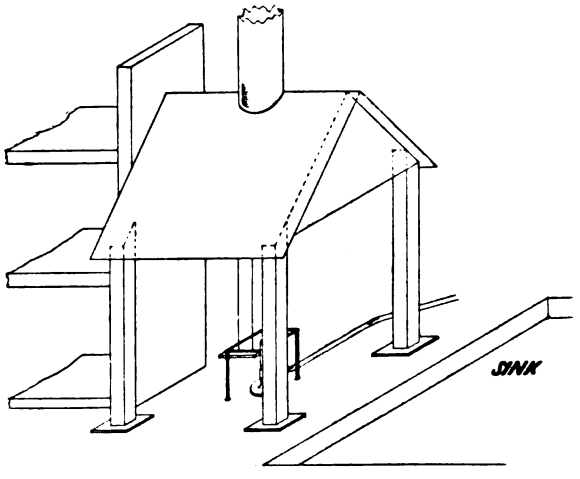


Fig. 3.—Fume Hood placed among Reagent Shelves.

space, and gas nozzles are often fixed in inconvenient positions.

Gas Supply.—The gas-pipes should be of ample bore and the pressure good; otherwise when many burners are lighted, and perhaps a gas furnace is in use, the supply will not be sufficient.

Electricity Supply.—The method of obtaining a suitable service of electricity will be dealt with later. It will suffice here to say that the same precaution must be observed as was needed for the gas supply. The cables should be capable of carrying a heavy current, even if the immediate needs only indicate the use of small ones. Since the use of the electric furnace is likely, in the near future, to be a matter of constant occurrence, one cable at least should be laid running to a furnace bench, and capable of carrying 100 amperes. A suggested position for the furnace bench is shown in Figs. 1 and 2. The material should be slate or Yorkshire stone, and a good flue must be provided.

Extraction of Fumes.—The method employed for the immediate removal of noxious fumes is one of vital importance, and unless some appliance for this purpose is to be fitted to every 8 feet of bench the supply of wall fume cupboards must be adequate, as in class-work all would require to use the cupboards simultaneously. In this case twenty-four students would require six cupboards 2 feet 6 inches or 3 feet in length, each fitted with four gas nozzles, water supply, and sink, or what is, of course, more economical of space, a groove cut in the stone base ending in a waste pipe. Probably the best method of removing fumes from these cupboards is by a powerful Bunsen burner fixed in a vertical flue leading from each cupboard, and not by a down-draught. If, however, it is decided to provide draught flues on the benches themselves, twenty-four students would require twelve such flues, and the problem of finding a suitable means of extraction is an extremely difficult one. There is, in fact, no question in laboratory design so much in need of investigation and experiment as this. Of course, if space permits, a fume hood such as is shown in Fig. 3 can be placed amongst the reagent shelves, and if used with a vertical flue, each being fitted with an independent Bunsen burner to create a draught, the extraction will be adequate; but the vertical flue is unsightly. More often a down-draught flue is

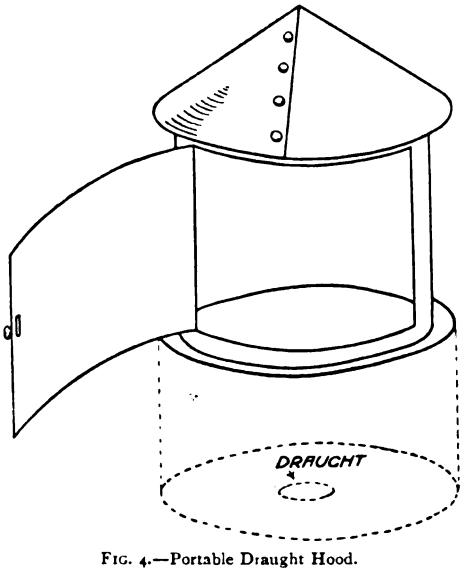


Fig. 4.—Portable Draught Hood.

provided in the bench top with a removable hood, as shown in Fig. 4, the opening being covered when not in use with a cap flush with the bench. This, of course, would be an ideal arrangement if a really trustworthy system of extraction could be devised. The bore of the main extract pipe should steadily increase as it continues to receive the inlet pipes from the benches, and its final area of cross-section should be equal to the sum of the areas of all the inlet pipes; thus, if twelve inlets are provided, each of 4 inches diameter, the main pipe must increase in area up to about 1 foot 4 inches diameter, and a powerful motor fan should be fixed at its widest part.

Sinks.—The utility of the large sinks fixed at the walls can be greatly increased if they are fitted with Fletcher's water-heater, draining boards, and racks, and to facilitate cleaning and to insure a good light the walls at the back of all sinks, fume cupboards, furnace chambers, &c., should be lined with glazed tiles or "Emdeca."

A still and condenser is a necessary adjunct; but since the use of distilled water for all purposes involves a considerable consumption of gas and the use of a still of inconveniently large dimensions, a great saving can be

effected by fixing in a convenient place in the roof a rain-water tank, and by running pipes from it to various parts of the laboratory. Each pipe should end in a delivery tap, below which is fixed a ring on a swivel arm to receive a

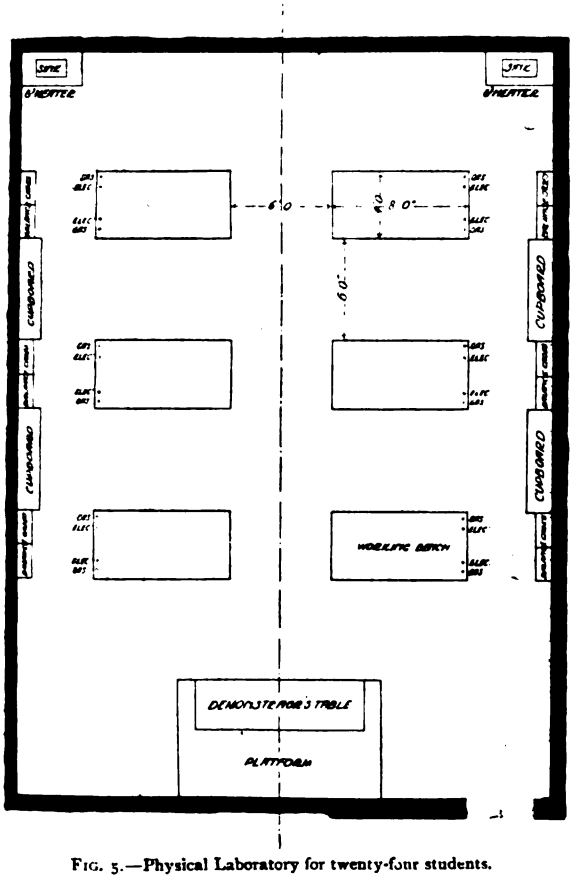


FIG. 5.—Physical Laboratory for twenty-four students.

filter funnel. Filtered rain-water is pure enough for ordinary purposes, and its use greatly diminishes the demands upon the still.

Balance Room.—A balance room containing a few sensitive balances is usually provided, but needs no comment. This concludes my survey of the more important points to be observed in the planning of the chemical department.

PHYSICAL DEPARTMENT.

Benches.—Turning to the physical side, we find that an arrangement of benches suitable for chemistry is often wholly unsuitable for physical work. Thus the continuous bench is undoubtedly to be avoided, as is also the narrow single bench of 2 feet 6 inches width, which many prefer in a chemical laboratory. Separate tables 8 feet by 4 feet are suitable for four students, or, where space permits, every two students could have a table 8 feet by 3 feet or 8 feet by 3 feet 6 inches. It must be borne in mind that in physical work the position in which a student places his apparatus is often beyond his control—*i.e.*, a lengthy piece of apparatus may *have* to be placed east and west or *vice versa*; hence the necessity for wide benches.

A suitable arrangement is shown in Fig. 5, the space required for gangways, &c., being the same as for the chemical laboratory. When the dimensions of the room are such that the central and side gangways are impracticable, some modification can be adopted. Symmetry of arrangement is, of course, just as desirable as in the chemical department, and due care should be exercised in choosing the position of apparatus cupboards, balance cases, and all the fittings in constant use.

Bench Fittings.—It is always advisable to leave the bench top entirely unencumbered. With this object in view, gas taps, &c., are placed in a row at the ends of the table, and not on the central radiating plan so often adopted. To add to the storage accommodation, the tables are fitted with cupboards underneath. These can vary in size to suit different apparatus; some can run the whole length of the table, which has double-hinged doors. The whole arrangement is shown in Fig. 6. It is by no means necessary to lay on a water-supply to the students' benches, the gain being incommensurate with the loss of space and accommodation, and two wall sinks, with heaters and draining boards, will, as a rule, be sufficient.

Store Cupboards.—Ample storage accommodation is of vital importance, the demands of a well-stocked physical laboratory being in this respect apparently inordinate, and obviously the stock of apparatus needed will steadily increase as the work develops. It is advisable that the shelves of all cupboards should be adjustable: much valuable space is often wasted by neglect of this precaution. Some cupboards may well be fitted with narrow vertical partitions for storage of long tubes, &c., while most apparatus is more conveniently stored and is more accessible if the shelves are of small dimension from front to back. The apparently trivial details of the fittings of the store cupboards are, in fact, worth careful consideration where space is not unlimited; and once more I would mention that the stock patterns are often wasteful of space and are inconvenient.

Every physical laboratory should contain a large stock of small drawers, measuring, say, 1 foot by 1 foot by 3 inches. These are invaluable for storing the innumerable small appliances in constant use, and every drawer should have a label indicating its contents. The catches upon the doors require attention. The ordinary bolt is often difficult to unfasten, and leads to shaking, and perhaps injury, to

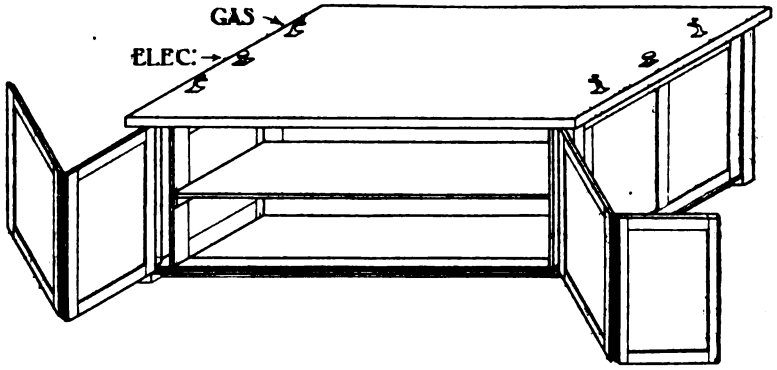


FIG. 6.—Student's Bench showing double-hinged doors and position for gas taps and electric terminals.

sensitive apparatus within the cupboard. For this reason a lever handle is preferable to the usual type supplied, and can, in fact, be fitted with advantage to all doors throughout the science buildings.

The possibility of future development must be constantly

borne in mind, and wall space left to admit of additional cupboards, shelves, and fittings.

It will materially add to the ease of cleaning the laboratories if *all* apparatus is placed under cover, and not upon open shelves. Cupboards should have flush, not welled, tops, and glazed doors are an obvious advantage.

Some form of drying cupboard is a valuable adjunct. The shelves and compartments of this should be perforated to allow free circulation of hot air. The source of heat can be an electric stove.

Cupboards, radiators, and all fittings should be so arranged that it is impossible for rubbish to accumulate behind them; if this is impracticable, the space between them and the wall should admit of easy cleaning.

Wherever the room is lofty enough, a gallery may well be provided, which, if not needed immediately, will afford a means of increasing storage accommodation in the future.

Lecture Rooms.

There are but few points to be mentioned in the planning of the lecture rooms. The arrangement of fixed isolated seats with a continuous desk is worth noticing, as is also the space left at the back of the seats to enable a student to move without disturbing his neighbours.

A space should always be left at the back of the room for a lantern stand, and another on the right of the lecture table for the use of a lantern in optical work. A roller screen on a swivel arm may be fitted opposite to this, but on the left of the table.

It is a good plan to fit the front of the lecture table with glazed cupboards, since the space at the back is often confined and ill-lighted. If the Kelvin sliding blackboard is used, pulley wheels of large diameter should be fitted; the small ones in general use render the board difficult to move.

Electric Service.

The system employed for adapting the electricity from the supply mains to experimental purposes is all-important, and requires careful consideration from every point of view before the plant is laid down and the wiring fixed. That modifications and additions in the future will be necessary goes without saying, and no effort should be spared to render such additions possible. Wherever the current from the mains is direct, the most satisfactory system, and in the end the most economical, is the use of a motor generator combined with secondary cells. The generator consists of a shunt-wound motor (built for the particular voltage of the supply current) coupled direct to a dynamo, the output of the dynamo being about 3,000 watts. The motor should be fitted with a speed-regulating resistance, while the adjustability of the voltage of the dynamo must be further secured by an additional resistance.

On this system a generator can be designed giving a range of voltage of 50–150 volts, or perhaps 30–100 volts, which amply provides for most of the "heavy" current work that will be needed. The bulk of experimental work, however, requires a current at voltages ranging from 2 to 25. This can best be secured by fixing in some convenient position, say, twelve storage cells of considerable capacity (120 ampere hours is suitable). The current from the generator can be diverted into them for charging, while discharging leads can run to the students' benches and lecture table both from the accumulators and from the generator direct. There will thus be assured a range of voltage from 2 to 100 or more, while the connections can be so arranged that the battery current at any voltage within its limits of 2 to 25 can be used at one set of terminals simultaneously with the generator current at 25 to 100 volts at the other.

The system of storage cells as a fixture is vastly preferable to the use of primary batteries, or even to portable accumulators. The connection of the cells should be arranged so that any individual cell can be charged or discharged independently of the others; otherwise an undue demand will be made upon the first few cells of the series.

It is important that the wires should be accessible and not embedded in the walls. While the wires from the generator to the furnace benches should be capable of carrying 100 amperes, wires to the arc lantern should have a carrying capacity of 20 amperes, while for the battery wires a 10-ampere capacity will be ample. It is probable that in the future no service will be complete which does not include the alternating as well as the direct current, and provision should be made that this additional plant can be added without structural alteration of the original. The whole system must be well protected with fuses; in fact, each pair of terminals in the benches should be so protected, in order that, in the event of a short-circuit at any working bench, the work at the others may not be interrupted.

"Series" wiring for elementary quantitative work is a valuable addition to the ordinary "parallel" system. If a controlling and regulating switchboard can be fixed in each laboratory and lecture room so much the better, but where this is impossible, on account of the expense, the physical lecture room is generally the most convenient site for the main regulating board. Of course the whole question requires careful consideration down to its minutest detail; and I can only indicate a few of the more important features to be observed, and of these "expansibility" is the chief.

There is one further point to which I wish to allude. In the case of laboratories for small schools, where it is not possible to provide spacious lecture rooms and laboratories, it is usual to arrange for a *small* laboratory and a *small* lecture room. It is, of course, a matter of opinion, but personally I think that one large room is greatly to be preferred. A glance at Figs. 1 and 2 or Fig. 5 will show that a comparatively small increase in length would enable seating accommodation to be placed in front of the lecture table without interfering in any way with the practical working arrangements of the laboratory. In fact, in one or two respects, the combined room has distinct advantages over the separate system, as lecture work and practical work can then be undertaken as occasion demands, and without creating difficulties in the matter of school time-tables.

A Debatable Point.—It is perhaps needless to say that many teachers of science would disagree with certain of the suggestions offered, at least so far as detail is concerned, but it would be interesting to know if the majority are in agreement with the five main principles advocated.

During the discussion upon the subject at the recent Conference of Science Masters, Prof. Armstrong indicated that he considered one, at least, of these to be fundamentally faulty, namely, that fittings should be so arranged as to minimise the unavoidable movement of pupils. He maintained that movement was rather to be encouraged than otherwise, and that sinks and rubbish boxes should be few and distant rather than many and easily accessible.

The two points of view are so divergent and involve such radical differences in the general planning of a laboratory, that it would be of value to the authorities of schools contemplating new buildings if the subject could be more fully discussed.

One recognises that with small classes of adults—each working at a different experiment—there might be no undue demand upon the few fittings that Prof. Armstrong

would allow. But when we have large classes of young boys, all working at the same experiment, all using similar apparatus simultaneously, there seems to be no doubt that separate and accessible fittings are indicated. Unless these are provided, the loss in time alone will be considerable, while the practical schoolmaster may justly urge that the strain of modern teaching is already great enough without placing a ban upon any appliance that tends to produce orderly and comfortable conditions for work.

SECONDARY EDUCATION IN LONDON.[1]

THE report for the year 1907–8 referred to the age at which secondary education might be assumed to begin, and it was suggested that the term "secondary" might be applied to a complete course of education which is so framed as to provide for boys and girls who will remain at school until the age of sixteen, seventeen, or eighteen, irrespective of the age at which such course begins. This view appears to have been adopted by the Board of Education. In the prefatory memorandum to the regulations for secondary schools for 1909, it is stated that "the education to be provided by a secondary school, beginning at an age not exceeding twelve, must be carried on through a progressive general course of instruction up to and beyond the age of sixteen," and "the education of the secondary school may, however, be advantageously begun at an age much below twelve, and, in fact, by means of kindergartens and preparatory departments is often made to cover education from its earliest stages." The Board, however, pays no grant on pupils in secondary schools below the age of ten, and only pays a grant on those between ten and twelve if they have been previously in attendance at an elementary school. As regards its own secondary schools (other than those governed by special schemes), the Council has fixed the lower limit of age at ten years, but it aids the supply of secondary education to pupils who are considerably younger. There were in the aided schools at the beginning of the year 1908–9 more than 1,000 pupils under ten years of age. The Council's grants towards the maintenance of secondary schools, exclusive of scholars' fees, amounted in 1908–9 to about £2 6s. 8d. per pupil in attendance. Assuming, therefore, that the aid given by the Council's grant is used to the same extent for all pupils, it may be said that the Council paid last year a sum of considerably more than £2,000 for the education in secondary schools of pupils under ten years of age.

Statistics included in the report show that there is a great drop in the number of pupils in attendance after the age of fourteen to fifteen years. No doubt a considerable number of pupils leave at this age in order to take up wage-earning employments, and in so far as this is the case the schools cannot be regarded as doing secondary-school work. The drop after the age of fourteen to fifteen years is, however, by no means entirely to be accounted for by pupils leaving at that age. In the year 1905 the Council introduced its scholarship scheme, which involved the admission to the schools in 1905, and in each subsequent year, of some 2,000 junior county scholars at the age of eleven. The first set of these pupils had in 1908–9 (the time to which the statistics relate) reached the age of 14+, and therefore the numbers of pupils above 14+, not having been increased by any similar influx of scholars, would in any case be small in proportion to the numbers below that age, even if every pupil remained until sixteen or eighteen.

There are in London thirty-nine public or semi-public schools[1] not aided by the Council, and the chairman of the London Joint Committee of the Private Schools Association has stated that there are at least 468 private schools within the area of the county. Of the public and semi-public schools, twenty-six are inspected by the Board of Education. The Council receives copies of the reports, and is therefore in possession of information enabling it to judge of the part played by these schools in the provision of secondary education in London. Of the remaining thirteen schools, some are schools of established reputation, such as the City of London Schools for Boys and Girls, but in regard to the others it cannot be said that the Council has sufficient knowledge to enable it to judge what place they fill in the educational system of London. The Council is to some extent kept in touch with the work of the public schools not in receipt of grants by the fact that the draft schemes for the government of all schools under public management are submitted by the Board of Education for the Council's observations.

The position of the private schools presents greater difficulty. Through the co-operation of the officers of the Private Schools Association the Council has been able to obtain information as to the number of pupils attending certain private secondary schools in the twelve areas into which London is divided for educational administrative purposes. These particulars, however, relate only to 158 schools, accommodating about 9,000 children; and even in these cases the Council has no information as regards the names and addresses of the individual schools or the number of pupils attending each, all that is given being the total number of pupils attending the schools in the area. Of the remaining 300 schools no information can be obtained. It is estimated by the Private Schools Association that some 27,000 children in London are being educated in private schools. As regards the nature of the education given the local education authority has no information. A very small number of such schools seem to be applying for inclusion in the lists of efficient secondary schools published by the Board of Education, and during the past year the Council has received copies of the reports of only one or two inspections of private schools in connection with these applications. It may be added that the list of efficient secondary schools published by the Board has not up to the present contained the names of any private schools in London.

There are now fifty secondary schools in London which are aided by the Council. The following are particulars as to the amounts of grant and other sources of income for the educational years 1907–8 and 1908–9:

Income (1)	1907–8 (2)	1908–9 (Estimate) (3)
Fees (inclusive of L.C.C. scholars' fees)	£109,854	£114,334
Endowments	54,322	52,533
Board of Education grant... ...	42,816	49,820
L.C.C. grant (exclusive of L.C.C. scholars' fees)...	47,567	41,516[2]
Total ...	£254,559	£258,203

The fees of Council's scholars amounted to £40,314 in 1908–9 and £35,432 in 1907–8. It will be noticed that the Council's grant, other than scholars' fees, is less by £6,051 than in the previous year. This is to a great extent

[1] Abstracted from the report of the Education Committee of the London County Council submitting the report of the Education Officer for the year 1908–9. Part v., Higher Education.

[1] *i.e.*, schools not conducted for private profit.

[2] Including grants paid subsequently to March, 1909.

accounted for by the fact that the Board of Education grant showed an increase of £7,004.

It has been felt for some time that it would be of advantage if the Council's representatives on the governing bodies of aided schools could be brought more into touch with the Council. It has, in fact, been found that, though the representation of the Council on the governing bodies (where the representative is a member of the Council or of the Education Committee) is valuable as enabling the views of the governing body to be placed before the Council, it is of less value in enabling the views of the Council to be placed before the governing body. The chairman of the Education Committee suggested that it would be advisable to invite the Council's representatives to a conference with the view of bringing them more into touch with the Council. A meeting was accordingly held, in which the general questions of the relations of the Council to the governing bodies and the considerations on which the Council bases its awards of grants were discussed. The members present unanimously decided that it would be of advantage for such conferences to be held periodically, and it was arranged that they should take place three times a year. It is anticipated that these periodical meetings are likely to be of considerable service in bringing the Council into closer touch with the secondary schools.

In consequence of the regulations of the Board of Education for secondary schools for 1909, it was necessary for the Council to reconsider the question of games fees in its own and other secondary schools. By the regulations these fees could not be charged to the Council's scholars otherwise than with the written consent of the parent or guardian. It was thought that in some cases where joining in games was most necessary for the scholars, parents would be unable on account of poverty to give their consent to the payment of the games fee. It was further felt that, as games form an integral part of the education given, the scholarship which provides "free education" should provide for participation in games. The Council accordingly decided to make itself responsible for the payment of the games fees of its scholars. It also decided that, in the case of its own schools, in order that payments for games fees by fee-paying pupils might be compulsory, such fees should be included in the general fee.

Now that the average age of pupils in the Council's secondary schools is rising, it will be necessary for the Council to lay down a definite policy as to whether, and, if so, to what extent, it proposes to teach in the secondary schools trades or occupations directly related to some particular trade or profession.

The question has been raised in the course of the past year by an application for the teaching of typewriting and shorthand in certain of the Council's schools. The Higher Education Sub-committee decided not to allow typewriting on the ground of its small educational value. An exception was, however, made in the case of one, where a special commercial curriculum has from the first been organised. In the case of this school it was decided to grant permission for lessons in typewriting to be given out of school hours. The question of shorthand was still undecided at the end of the year. Instruction in cooking is given in those secondary schools for girls where the necessary facilities exist. This instruction is, however, not to be regarded as the teaching of a trade, and its inclusion in the curriculum is due partly to the fact that all girls should receive instruction in those branches of work which relate to the keeping of a home and partly to the fact that this subject affords a suitable means for training girls in some branch of manual work.

CAMBRIDGE UNIVERSITY LOCAL EXAMINATIONS.

Set Books for 1911.

Religious Knowledge:—*Preliminary.*—(*a*) St. Luke, ix.–xviii., or (for Jewish students only) Judges, i.–xii.; (*b*) Ezra and Nehemiah.

Juniors.—(*a*) St. Luke, or (for Jewish students only) Joshua, i.–xii., xxii.–xxiv.; Judges, i.–xii.; (*b*) Ezra, Nehemiah, and Haggai; or (*c*) The Acts of the Apostles, i.–xv.

Seniors.—(*a*) St. Luke, or (for Jewish students only) Joshua, i.–xii., xxii.–xxiv.; Judges, i.–xii.; or (*b*) The Acts of the Apostles, i.–xv.; (*c*) Ezra, Nehemiah, and Haggai; or (*d*) Galatians and St. James.

English Language and Literature:—*Preliminary.*—(*c*) "Gulliver's Travels" (ed. G. C. Earle, Macmillan); or (*d*) Macaulay, "Horatius," "Lake Regillus," and "The Armada."

Juniors.—(*b*) Shakespeare, "A Midsummer Night's Dream"; or (*c*) Scott, "Quentin Durward"; (*d*) a paper of questions of a general, not a detailed, character on "Coverley Papers from the Spectator" (ed. K. Deighton, Macmillan), and Goldsmith, "The Traveller" and "The Deserted Village."

Seniors.—(*b*) Shakespeare, "A Midsummer Night's Dream"; or (*c*) Milton, "Paradise Lost," v., vi.; (*d*) a paper of questions of a general, not a detailed, character on Shakespeare, "The Tempest," Scott, "Waverley," and "Poems by Matthew Arnold," pp. 46–110 (ed. G. C. Macaulay, Macmillan).

History, Geography, &c.:—*Preliminary.*—History of England. The paper will consist of three Sections on the periods (*a*) 1066 to 1485, (*b*) 1485 to 1603, (*c*) 1603 to 1714 respectively. Candidates may, if they wish, select questions from all three of the Sections, or may confine themselves to two or one of them.

Geography. Great Britain; and general Geography.

Juniors.—(*a*) History of England. The paper will consist of three Sections on the periods (*a*) 1066 to 1509, (*b*) 1509 to 1688, (*c*) 1688 to 1832 respectively. Candidates may, if they wish, select questions from all three of the Sections, or may confine themselves to two or one of them. Or (*b*) Outlines of the History of the British Empire from A.D. 1763 to A.D. 1878. Or (*c*) Outlines of Roman History from B.C. 44 to A.D. 37.

(*d*) Geography. Questions will be set on (*a*) Great Britain and Ireland, (*b*) Europe, (*c*) Australasia. Candidates may select questions from all three of the Sections, or may confine themselves to any two.

Seniors.—(*a*) History of England. The paper will consist of three Sections on the periods (*a*) 55 B.C. to 1509 A.D., (*b*) 1509 to 1714, (*c*) 1714 to 1867 respectively. Candidates may, if they wish, select questions from all three of the Sections, or may confine themselves to two or one of them. Or (*b*) History of the British Empire, as for Juniors. Or (*c*) Greek History from B.C. 431 to B.C. 359.

(*d*) Geography. The paper will consist of four Sections on (*a*) Great Britain and Ireland, (*b*) Europe, (*c*) America, South of Mexico, (*d*) Australasia, respectively. Candidates may select questions from all four of the Sections, or may confine themselves to any three or any two.

Latin:—*Preliminary.*—Edwards, "The Story of the Kings of Rome" (Cambridge University Press).

Juniors.—(*a*) Caesar, "de Bello Gallico," VII., 1–33; (*b*) Caesar, "de Bello Gallico," VII., 34–67; (*c*) Virgil, "Aeneid," I., 1–401; (*d*) Virgil, "Aeneid," I., 305–756.

Any two of these four to be taken.

Seniors.—Livy, II., 1–41; or Cicero, "pro Roscio Amerino." Virgil, "Aeneid," I.; or Lucretius, V., 771–end.

GREEK:—*Juniors.*—(*a*) Xenophon, "Anabasis," IV., 1–4; (*b*) Xenophon, "Anabasis," IV., 5–8; (*c*) Euripides, "Medea," 1–753 (omitting 96–212, 410–444, 626–657); (*d*) Euripides, "Medea," 658–end (omitting 819–860, 971–996, 1076–1110, 1246–1289).

Any two of these four to be taken.

Seniors.—Thucydides, VII., 50–end; or Plato, "Apology." Homer, "Odyssey," IX., X.; or Euripides, "Medea."

FRENCH:—*Juniors.*—Dumas, "La Fortune de D'Artagnan," 1–13.

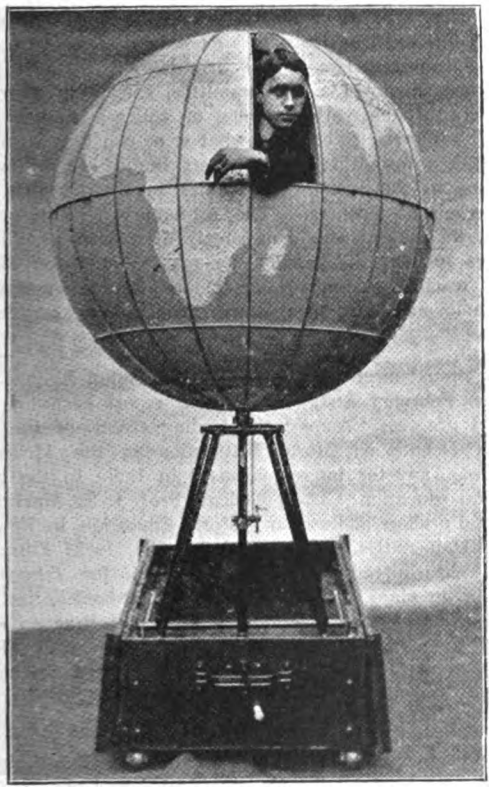
Seniors.—No set books are prescribed.

GERMAN:—*Juniors.*—Hauff, "Die Karavane" (omitting "Die Errettung Fatme's").

Seniors.—No set books are prescribed.

A LARGE TERRESTRIAL GLOBE.

TEACHERS of geography know the difficulties attendant upon their attempts to make the pupils imagine from their representation upon the flat map the relations between places upon the round earth. Especially is this difficult when the comparison is to be made between the mountain about three or four miles high and the length of the earth's diameter. Mr. George R. Gill has after thirteen years' endeavour perfected a globe which is 4 feet 2½ inches in diameter, and yet can be taken to pieces and packed away



in a box which will occupy the floor space of a piano. The box with the completed globe is shown in the illustration, in which a youth is to be seen inside the globe looking through the space normally covered by one of the surface sections. The whole is rigid and durable; there are supports and axis of steel, eighteen meridians of wood, and thirty-six surface sections made of mild steel coated with *papier-mâché*. The whole can be taken to pieces so that the parts may fit into the box. The surface sections can be obtained in three forms, covered with political maps, with relief maps in which the vertical scale represents an exaggeration of only twenty times, and plain for map work by the teacher. The whole can be rotated easily upon its axis, and the axis can be adjusted to any slope desired. The utility of this triumph of globe-making will be at once apparent: for questions of position and latitude and longitude the skeleton globe, eighteen meridians, and the equator may be used; for questions of surface configuration, such as the extent of the Great European Plain and the relation to it of the great towns on the Continent, the relief surfaces, on which the positions of the towns may be marked by dots, are available; and for political purposes the other surface can be fitted; and the globe is sufficiently large for all the class to see and follow the lesson. For questions of day and night this globe lit—by rays from the school lantern—will be most effective; and even the connection between the practical measurements of the sun's altitude carried out in the playground, and shadow experiments with a small stick, can be effectively made on this globe's surface. With a globe of these dimensions wall maps of the continents become almost unnecessary, and the geography lessons gain in reality. This globe, in fact, places a new power in the hands of the skilful teacher.

HISTORY AND CURRENT EVENTS.

WHILE we in Great Britain and Ireland are busy "making a revolution," as our newspapers tell us, the world in general, and Europe in particular, has no news of special interest. At any rate, there is no international "current politics." It seems to be true, as M. Pichon, the French Foreign Minister, said some time ago, that "the forces of Europe are now in stable equilibrium." He used that expression in order to add to it that "in that balance of power France occupies the position which belongs to her." Are we justified, therefore, in thinking that responsible leaders of French politics have ceased to desire that "revenge" on Germany for the events of 1870–1 which was dreaded during the forty years that have since elapsed? There are signs that we may hope for this consummation, and that, at any rate for the present, Europe will not be disturbed by a renewal of that thousand-year conflict for the Rhine which has been one of the longest threads in the tangle of European history.

IN the latter part of 1908 Europe seemed to be possibly on the eve of war, owing to events in the Balkan peninsula. The annexation of Bosnia and Herzegovina by Austria-Hungary, the proclamation of Bulgaria as a kingdom, and the consequent discontent of Servia, were the latest events in the story which has changed the map of that part of Europe since some of us at school learned our geography. Yet now, almost imperceptibly to the ordinary reader of newspapers, Europe has accepted the new situation. To those who know something of eighteenth-century history, and especially of the plans, only partially carried out, of Catherine II. of Russia and Joseph II. of Austria, this advance of Austria and the growth of independent kingdoms in the eastern part of the Balkan peninsula

appears an interesting and unforeseen development. Then it was Russia which was triumphant and advancing. Now it is Austria which has gained.

And yet, though there is no apparent cause of war, Europe continues to arm. On the Continent huge armies are maintained, every country bordering on the sea is increasing its navy, and we are told by all responsible statesmen that these are measures necessary for preserving "peace." So, in the eighteenth century, we read in the declarations of war that the object of the belligerents was constantly "to maintain the peace of Europe." Then it was the action of despotic kings, enlightened or otherwise, prosecuting their lawsuits about successions to territory or maintaining the "balance of power," and Carlyle, in "Sartor Resartus," could satirise that warfare as the "devilry of kings." But now, with Parliaments in every country, more or less satisfactorily representing the opinion of "the people," we have the same phenomenon, and the professed object of the navies is "to protect commerce." Against whom?

During the past few years there has been much exploration of that part of Asia which lies to the north of the Himalayas. Great additions have been made to our knowledge of geography, but, what has been more surprising, discoveries have been made in those regions and in other parts of Asia, not only of ancient buildings, but of documents that throw light on the history of governments and religions in that part of the world. Relics of the Buddha have been found, and written documents of various kinds belonging to the history of Chinese civilisation. The details of these matters we must for the present leave to the experts; but when these have interpreted the documents and told us what they contain, the domain of history—of world-history—will have been enlarged, and we shall be content no longer with the history of Europe, but must learn more of those great world-movements which are so little known at present among us.

ITEMS OF INTEREST

GENERAL.

The Decoration Committee of the Shakespeare Festival Celebration, which is being held at Stratford-on-Avon this year, has issued an appeal to schools for assistance in decorating the streets of the town on the occasion. The committee suggests that each school should supply a wreath in accordance with an official specification, or send a donation of half a guinea to enable the committee to purchase a wreath in the name of the school. The names of schools supplying wreaths will be inserted in the official programme of the celebration. Teachers wishing their classes to participate in the scheme should communicate promptly with the secretary, Festival Association, Guild Street, Stratford-on-Avon, as wreaths must be received by the secretary not later than April 19th next.

The Hindhead Summer School courses for teachers, held in preceding years at the Froebel Institute and at the Home School, Highgate, will be held this year at St. Edmund's School, Grayshott, from August 1st to 20th inclusive. Classes have been arranged in the psychology of the child, special methods of learning, school organisation, nature-study, geography, and handwork. The lecturers will include Miss M. E. Findlay, Prof. J. J. Findlay, and Dr. J. W. Slaughter. For particulars apply to Dr. J. W. Slaughter, 4, Harcourt Buildings, Temple, E.C.

The seventh annual holiday course for foreigners arranged by the University of London will last from July 18th to August 12th, and will be under the direction of Prof. Walter Rippmann. This holiday course is becoming well known abroad, largely owing to the help of past students, close on 250 of whom act as honorary correspondents in eighteen countries. The arrangements are on the same lines as in previous years; as in 1909, no students will be admitted for a fortnight only, and there will be not more than eight students in any conversation and reading class. In recent years the applications have been considerably in excess of the accommodation, and those wishing to take part in the course are advised to apply early. All communications should be addressed to The Registrar, University Extension Board, South Kensington, London, S.W., the words "Director of the Holiday Course" being added in the top left corner.

At the end of February a conference of the principals of training colleges and representatives of the executive of the National Union of Teachers was held at the offices of the latter. Some forty colleges were represented. The following questions were considered: (*a*) degree course students in training colleges—the attitude of the Board of Education; (*b*) the employment of ex-students; (*c*) the discontinuance of the acting teachers' examination; (*d*) examinations qualifying for admission to a training college. It was resolved: "That, in the opinion of this conference, it is neither just nor conducive to educational efficiency that failure to pass the final or alternative university examination in university work, as prescribed by the Board of Education for second- or third-year students, should necessarily place the student in an inferior position for gaining the certificate to others who have done less work and passed less severe examination tests." The conference appointed a sub-committee, consisting of representatives of the various types of colleges and of the N.U.T. executive, to consider what steps can best be taken to collect information and suggest immediate action in reference to the pressing difficulties in the training and certification of teachers. The conference also resolved: "That the present abundant supply of trained certificated teachers justifies the demand for (*a*) the abolition of the acting teachers' examination; (*b*) the gradual restriction of employment in elementary schools to certificated teachers."

The annual meeting of the Moral Education League was held on February 21st. The annual report recorded substantial progress. Among the leading events of the year was a Debate on Moral Instruction in the House of Commons, and the interest aroused in India in the cause of moral education. The president, Prof. J. S. Mackenzie, delivered a short address on "Moral Education in Relation to the Universities." He stated that the Moral Education League has already done a great work for schools by drawing up plans of study, preparing text-books, and providing moral lessons. It is now important that an effort should be made to connect this work with that of the universities. Miss Margaret McMillan delivered the annual address, and dealt with the subject of "The Place of Imagination in Moral Education."

A joint conference on the teaching of geography in schools, arranged by the Geographical Association and the Federated Association of London Non-Primary Teachers, was held in London on March 12th. Mr. H. J. Mackinder gave an address on "The Regional Method in Geography." After a brief account of the historical development of the

subject, he sketched a four-year course of geography for secondary schools, in which he urged that the treatment of the subject-matter must be regional, progressive, and concentric. The study of the home district in the first year of the course, and the acquisition therein of the fundamental concepts of geography, should lead in the second year to the study of climatic conditions and attendant human activities in the region of the British Isles. In an ever-widening circle the child, in the third year of its study, should be led to apply its knowledge to the European continent; thence, in the fourth year, to the countries of the whole world. Throughout the whole course correlation with other subjects is essential, and a knowledge of elementary geology, elementary physics, and history must be postulated before the geography teacher can with success carry out his scheme. By means of such a course as this the child could be led to connect cause and effect, to correlate human interests and physical forces in different parts of the world, to realise the play of political forces, and to develop the power of thinking in terms of the world. The shrinking of the majority of people from contact with large, intellectual ideas, and their love of the small, concrete, and visible, are, said Mr. Mackinder, largely due to their lack of training in the power to roam in thought over the world surface and to grasp world forces. Geography taught on the broad lines indicated would help to give the power of seeing swiftly and truly the relative importance of the facts around us, and of rejecting ruthlessly all but those that were essential to our scheme of thought.

The chairman's review of the work of the Education Committee of the County Council of the West Riding of Yorkshire, addressed to the committee at the end of February last, provides a splendid record of accomplishment in the development of educational facilities. In the case of secondary education, a complete survey of the provision of secondary schools within the area was made in 1903. It was evident from this survey that the supply of these schools in the West Riding of Yorkshire as a whole was very deficient, some areas having no provision for secondary education. This was especially true in regard to the provision for the education of girls. There was no public secondary day school for girls south of Wakefield, save in Sheffield. The Education Committee resolved to assist the provision of secondary education by making grants in respect of new schools and extensions, and also in respect of debts already incurred in providing school buildings. The grant provided in the case of new schools or extensions was generally one-third of the cost, and in the case of debts upon existing school buildings 10 per cent. of the debt. Towards the cost of furnishing and equipping schools, grants at the rate of 50 per cent. of the cost were made.

The result has been that new buildings, with a total accommodation of 2,270 places, have been opened in the West Riding, and ten of them are in use, seven being dual schools. New buildings are in course of erection in eight other places, and in four localities building operations will be commenced shortly. In addition to this, extensions and improvements have been effected in a large number of schools. As the chairman remarked, it may now be claimed fairly that the aim of the committee that there should be no locality in the Riding to which facilities for higher education are not reasonably accessible has been practically realised. Great attention has been directed to the problem of providing a special form of secondary education suited to the needs of those children living in rural districts who, when they grow up, are likely to follow some agricultural career. A school of this type—the Knaresborough Rural Secondary School—is already serving the north-eastern portion of the Riding, and the question of establishing similar schools in other centres is under consideration. By the opening of the school at Knaresborough a notable educational experiment was set on foot, and one which has already attracted great attention. At the opening of the school in 1908 there were 38 pupils, in October last 89, and there are now 102 pupils in attendance. This new provision of secondary education in the West Riding has been accompanied by a satisfactory increase of the numbers in attendance. In 1903–4 the number of boys was 2,025, whilst in 1908–9 the number had increased to 3,388. The increase in the number of girls is more striking, there being 965 in 1903–4, and in 1908–9 there were 3,161. Towards meeting the cost of maintenance of secondary schools, the committee organised a scale of grants, under which an annual sum of about £17,000 is distributed amongst the schools of the Riding.

The Board of Education has published a list of thirty holiday courses which will be held on the Continent at different times during the present year, but mostly in the summer months. Seven of the courses are in German-speaking countries, viz., at Greifswald, Jena, Marburg, Neuwied, Lübeck, Kaiserslautern, and Salzburg; three in French Switzerland, at Geneva, Lausanne, and Neuchatel; one in Spain, at Santander; one in Italy, at Florence; and the rest in France, at Besançon, Dijon, Grenoble, Nancy, Boulogne-sur-Mer, St. Servan-St. Malo, Paris, Versailles, St. Valery-sur-Somme, Honfleur, Bayeux, Granville, Caen, Lisieux, Villerville, and Rouen. The table published 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 (price 2*d*.) can be obtained direct from Messrs. Wyman and Sons, Ltd., Fetter Lane, London, E.C., or through any bookseller.

The following comparative table, issued by the London County Council Education Committee, shows the demand for the twenty-two most popular prize books in London elementary schools last year and their relative popularity in 1908:

Title	Number supplied in 1909	Position in 1909	Position in 1908
Grimm's Stories	4,080	1	2
Andersen's Stories	3,898	2	1
Tanglewood Tales	2,376	3	4
Robinson Crusoe	2,374	4	5
Tom Brown's School Days ...	2,191	5	6
Water Babies	2,041	6	12
Little Women	1,855	7	7
Gulliver's Travels	1,753	8	16
Westward Ho!	1,715	9	13
The Pilgrim's Progress	1,378	10	—
Coral Island	1,334	11	10
Lamb's Tales	1,306	12	9
Æsop's Fables	1,291	13	—
The Little Duke...	1,260	14	—
Holiday House	1,247	15	—
Kingsley's Heroes	1,143	16	14
Old Curiosity Shop	1,100	17	8
John Halifax	1,089	18	11
Ivanhoe...	1,050	19	15
Alice in Wonderland	994	20	3
In the Gypsies' Van...	925	21	—
David Copperfield	908	22	17

It will be noticed that "The Pilgrim's Progress," "Æsop's Fables," "The Little Duke," "Holiday House," and "In the Gypsies' Van" had no place among

the seventeen most popular books in the year 1908. The complete return of the number of prizes requisitioned shows that there has been a satisfactory increase in the demand for books on history, biography, and nature-study, and for the better class of recent fiction.

The *Classical Review*, which has been published by Mr. Nutt for twenty-three years, has now, together with the *Classical Quarterly*, been taken over by the Classical Association, and the two periodicals have been constituted the official organs of the association and also of the Philological Societies of Oxford and Cambridge. They will both be published by Mr. John Murray. Prof. Postgate and Dr. Rouse will continue to edit them for 1910, and the management will be vested in a board of seven members, five representing the association—Dr. Butcher (chairman), Prof. Conway (hon. treasurer), Mr. Harrison (hon. secretary), Prof. Haverfield, Prof. Mackail—and the other two the Philological Societies—Prof. Ridgeway and Mr. Richards. The *Review*, at 1*s.*, will appear eight times a year, and the *Quarterly*, at 3*s.*, four; there is a reduction on these terms for members of the association. The new arrangement is an excellent one; and seeing that there is no other periodical in England to compete with these publications, the management should be able to secure the increased support which they look for, and be able to make the enlargement which they promise will give fuller space to the study of Roman antiquities both on the Continent and in Britain.

The January issue of the *Journal of the Association of Teachers in Technical Institutions* contains the address on "The Relation of the Technical Institution to the Modern University" delivered recently before the association by Mr. Wilson, its president. After showing conclusively that the London polytechnics provide education of university standing for a large number of students who have acquitted themselves with credit in the degree examinations of the University of London, Mr. Wilson summarised the points on which most members of the association would be agreed in the matter of the relations of the University of London with the London technical institutions. These may be stated as follows: A wider recognition of London polytechnics by the University of London than exists at present. More institutions might well be recognised, and the distinctions between "schools" and "non-schools" of the University might be abolished. More teachers in polytechnic institutions should be recognised as teachers of the University, and the existing regulations concerning internal students, together with the burdensome and intricate machinery of official forms, might be simplified. And there should be a greater similarity between the regulations for "internal" and "external" examinations than exists at present.

The January number of *Science Progress* is the best that has so far appeared, and all the articles will be found to repay perusal. Prof. Armstrong contributes one of his characteristic essays entitled "The Future of Science in our Schools—their Complete Reorganisation a Necessity," being the presidential address to the Association of Public School Science Masters. Dr. Russell's article on "Factors which determine Fertility in Soils," and that by Mr. Parkin on "The Science and Practice of Para Rubber Cultivation," deal with subjects which should appeal to all. The topical question of Halley's comet is presented by Mr. W. B. Brodrick from a novel point of view. Geographers will welcome the first instalment of an article on "The Gulf Stream and Climate and Crops in Northern Europe." The remaining articles are equally attractive.

In a short notice of Mr. Armstrong's "Old Ballads of England" (Messrs. Ralph Holland) the following sentence occurs: "The ballads chosen are in some cases edited; very many ballads are not *virginibus puerisque*." We should have thought it impossible to misunderstand this. The sentence means that very many ballads are not suitable for children. It cannot, it seems to us, mean that very many ballads in Mr. Armstrong's collection are unsuitable for children; but as this meaning has been attached to our notice we hasten to repudiate such an interpretation.

SCOTTISH.

At a meeting of the Scottish Modern Languages Association, Principal Sir Donald MacAlister said that a conference has been arranged by the four universities to discuss the whole question of the preliminary examinations for admission to those bodies. In this way it is hoped to arrive at a common understanding which will be satisfactory to all parties. Last year Glasgow University put in operation a new ordinance with regard to the award of bursaries, and removed the bar to modern languages which for so long has been a standing grievance in that association. The arrangement is only tentative and experimental, but it has worked so well that it has been resolved to continue it. In the revised ordinances for the arts degree alternative curricula have been provided whereby modern languages will count very much in the same way as ancient languages. In honours they have gone a good deal further, because it is now possible to combine the study of a modern language with Latin or Greek or English.

After a good deal of discussion, Edinburgh School Board has resolved to adopt the principle of central schools for pupils who have passed the qualifying examination and are desirous of pursuing a two years' supplementary course of practical instruction. The chief considerations that weighed with the Board in coming to this decision were that co-ordination was thereby much more easily secured and the maximum of efficiency was secured at the minimum of cost. It is generally agreed that the present system of supplementary courses requires a thorough overhauling. The practical work is too often carried on with insufficient means and by unqualified teachers, and it is inspected and supervised by unqualified inspectors. Some of the inspectorial staff of the secondary schools could with advantage be detailed for the supervision of supplementary schools and classes.

The Higher Education Committee of the Educational Institute has forwarded to the Education Department a memorandum on the subject of post-intermediate courses for secondary schools. While desirous of leaving to schools a wide choice of subjects, the committee is of opinion that regard should be had in every case to the following principles: (i) Every post-intermediate course should embrace (*a*) subjects of general education; (*b*) subjects of special study. (ii) In every course the following subjects should be compulsory, viz., English, including some study of general history, and physical training. (iii) The scope of the curriculum and the standard of examination should be such that the course could be satisfactorily completed by the average pupil in two years. (iv) A leaving certificate should be given on the satisfactory completion of any course. The "satisfactory completion" should imply (*a*) a distinct pass in the subjects of special study and (*b*) a satisfactory appearance in the subjects of general education. No certificate should be granted unless the candidate shows reasonable proficiency in English.

THE Secondary Education Association has also had the subject of post-intermediate courses under consideration, and its findings will be found to be in general agreement with those of the Institute. (i) Courses should provide a preparation for further study at the universities and central institutions, and also for entrance on the business of life. (ii) Courses should extend over at least two years. (iii) Courses may be specialised or non-specialised. (iv) Specialised courses should provide for the intensive study of two subjects. (v) In addition to English and the two main subjects, a course might contain one or more subsidiary subjects. (vi) A leaving certificate should be granted for passes at the end of the course on the higher grade in three subjects, viz., the two major subjects and English.

AT a meeting of the Secondary Education Association (Dundee Branch) Mr. Alex. L. Curr read a paper on "Commercial Education in Scotland." He said that few would be disposed to deny that, as a nation, Britain had altogether failed to realise her duty in the matter of commercial education. The chief blame for this rested, not with the education authorities, but with the business man, who was inclined to look askance at the products of commercial education. The same thing had once held good among the great masters of industry. They looked with extreme suspicion on the products of the universities and technical colleges, and openly expressed their preference for the rule-of-thumb men. But the hard logic of facts had converted them, and now the demand was more and more for the thoroughly trained man. The chiefs in the commercial world could only be convinced by similar means. The course of commercial study must be made so thoroughly practical that its products could at once prove their worth in the office and counting-house. Hitherto they had been merely playing at commercial courses, which were usually the happy hunting-grounds of the slacker and dullard.

AT a meeting of Edinburgh School Board the chairman referred to the transference of Mr. G. W. Alexander, clerk to the Board, to the assistant secretaryship of the Scotch Education Department, and moved the adoption of a minute recording the great services of Mr. Alexander to education in the city. Mr. J. W. Peck, principal assistant to the chief officer of the London Education Committee, has been appointed clerk to the Edinburgh School Board in the room of Mr. Alexander.

GLASGOW UNIVERSITY COURT, through the generosity of a private donor, has been enabled to institute two new lectureships, one in Scottish history and the other in Scottish literature. For the former they have been able to secure the services of Sir Herbert Maxwell, Bart., and for the latter of Dr. William Wallace, formerly editor of the *Glasgow Herald* and a well-known authority on Burns.

IRISH.

THE Department of Agriculture and Technical Instruction announces, as in previous years, numerous summer courses of instruction for teachers to be conducted this summer in July and August. The courses, which will be held from July 5th to 29th, will be (i) in experimental science, in laboratory arts, and in drawing and modelling; (ii) in domestic economy and in manual training (woodwork); (iii) in office routine and business methods; (iv) in hygiene and sick nursing, and in housewifery; and (v) in Carrickmacross lace-making, crochet-work, embroidery, and sprigging. Those in August will begin on the 2nd and close on the 27th, and will be (i) in manual training (metal-work), in practical mathematics and mechanics, and in handwriting; (ii) in industrial chemistry; (iii) in rural economy; and (iv) in school gardening. All these courses will be held in Dublin, except that in lace-making, &c., which will probably be conducted at the Crawford Municipal School of Art, Cork. If there are sufficient applicants there may be eleven separate courses in experimental science alone, viz., in the first year of the preliminary course, and in the third- and fourth-year courses in physics, chemistry, mechanical science, botany, and physiology and hygiene. These will not be limited to the subject-matter of the syllabuses for secondary schools, but will aim directly at bringing home to teachers the intentions of the Department in these syllabuses. Provisional recognition to teach the subject of the course may be given to teachers taking the summer course in it. Summer courses in the first-year syllabus and in the second-year syllabus of the preliminary course will be conducted in future only in alternate years. The courses in drawing and modelling will this year not be open to persons residing or teaching in schools within ten miles of Dublin, as they are able to attend day or evening courses during the year at the School of Art.

MR. THOMAS O'DONNELL has raised the question of increased funds for intermediate education by asking the Chancellor of the Exchequer whether, seeing that the money available for intermediate education in Ireland, all of which is purely Irish money, is most inadequate, and will be still further reduced for the coming year, he will consider the necessity of giving a grant in the forthcoming Estimates in order to enable secondary schools in Ireland to carry on this most important branch of education. Mr. Birrell, in replying for the Chancellor, pointed out that the income of the Intermediate Board is not provided by vote of Parliament. It is made up of the interest on a sum of one million pounds derived from the Irish Church Temporalities Fund, and of the residue of the Irish share of the Customs and Excise duties after certain statutory charges have been made. The latter portion had no doubt decreased, and Mr. Birrell promised to confer with the Chancellor as to the possibility of providing a grant from the votes in Parliament, but thought it was too late to do anything in connection with the Estimates for the coming year. This is the first time that the admission has been officially made in Parliament that the intermediate funds are inadequate.

THE Senate of the National University has appointed a committee to meet representatives of the heads of intermediate schools and to ascertain their views in regard to the standard of examination which should be prescribed for matriculation. It has also decided that St. Patrick's College, Maynooth, should be considered as a recognised college of the University, and further that all examinations in 1910 for degrees shall be conducted on the courses of the late Royal University as these courses would have been had the Royal University continued to exist.

THE Central Association of Irish Schoolmistresses held its annual meeting in Alexandra College on February 16th, when a paper was read by Miss Cunningham, principal of Trinity Hall, which is the Trinity College Hostel for its women students, on "Little Girls and Examinations." Public examinations for young girls under sixteen were disapproved.

AT the distribution of prizes at the Metropolitan School of Art at the end of February, Mr. T. P. Gill, who pre-

sided, directed attention to the possibilities of Irish arts and crafts, and hoped that the country would realise the good progress that was being made and afford them all possible encouragement. Great improvement had taken place in the past generation, and in two departments it could be claimed that Ireland was now pre-eminent in Europe. These were stained glass and enamelling. Excellent work was also being done in mosaics and in the art of wall and fresco decoration.

WELSH.

The chairman of the Montgomeryshire County Education Committee has drawn up a statement as to the recent progress of school administration. The grants for the last year amounted to £17,203, and have in recent years steadily increased, although the number of children on the rolls has decreased. For example, the present number is 8,620 pupils, as against 9,335 in March, 1907. The average attendance, however, for the nine months ending December 31st, 1909, was 87·2 per cent., as against 82·9 per cent. in 1907. The county rate for the last three years has remained at 8*d.* in the pound. Teachers' salaries in 1909–10 amount to £19,750, as against £18,386 in 1906. The cost of requisitions has declined from 3*s.* 4*d.* per head in 1904 to 2*s.* 11½*d.* in 1908–9. The cost per scholar of education in the schools is £3 7*s.* 11*d.* On the appointed day in Montgomeryshire there were 29 council and 69 voluntary schools. The numbers now stand at 42 council and 58 voluntary schools.

In Flintshire there are 68 non-provided schools and 36 provided schools. This is a larger proportion than in any other North Wales county. For example, in Merionethshire there are 19 non-provided schools and 65 provided schools. The average attendance in Flintshire last year was 86·7 per cent., as against 78·8 per cent. in 1904. In 1904 the Education Committee employed 493 teachers, of whom 165 were certificated, and they now have 641 teachers, of whom 186 are certificated. The supplementary and provisional assistants have increased from 92 in 1904 to 144 at the present time, and uncertificated assistants in the same period have increased from 106 to 194. The facilities for technical instruction have increased recently in Flintshire. There are now ten centres for the teaching of gardening, with 164 boys under instruction. There is one centre for dairy-work, and there are three centres for woodwork attended by 360 boys, nine for cookery attended by 744 girls, and one for laundry-work at Mold, attended by 36 girls. Evening instruction is given in 212 classes to 5,887 students, the numbers in 1905 being 71 evening classes and 1,071 students. The total rate for elementary and secondary education is one shilling in the pound.

At a meeting of the secondary-school teachers of Carnarvonshire the question of curricula has been discussed. It was felt undesirable that the county authority should absorb the powers of the local governing bodies in such a matter, but at the same time members desired to put no impediment in the way of a general scheme for differentiating the work of the schools by assigning prominence to special subjects in special districts. It was pointed out, however, that the limitations already imposed by the Board of Education and by the examination schedules of the Central Welsh Board made any further outside control very undesirable.

This year direct encouragement was given by the Board of Education to the celebration of St. David's Day on March 1st. The Welsh Department has approved of various proposals submitted by education authorities of time-tables for the morning of St. David's Day—*e.g.*, the singing of Welsh patriotic songs, the recitation of Welsh poetry, and addresses on subjects connected with Welsh nationalism. The Board of Education has therefore identified itself with the training of children to regard St. David's Day as a national festival, and to turn the celebration to educational service. The use of the Welsh language varies from district to district, but all teachers will recognise the value of bringing children into the closest knowledge of their district in nature-study, in geography, in history, in local antiquities. If the observation of St. David's Day by the schools increases the interest in these subjects it will be of great benefit.

The proposals of the Carnarvonshire County Council to bring all the county schools under a uniform scheme for fees, curricula, &c., has been vigorously resisted by the supporters of the old Friars' School, Bangor. Prof. E. V. Arnold has taken a leading part in the advocacy of the advantages of a classical school like the Friars' School to the district, and has insisted incisively that the proposals involve a breach of the compact entered into with the governors of the school when they handed over the school to the county authority. It is complained that the proposal would lower the status of the school and reduce the educational facilities of the district exactly at the point where the whole Welsh system is weakest. Mr. H. C. Vincent, the opponent of Mr. Lloyd George at the recent Parliamentary election, is one of the most earnest supporters of the rights of the Friars' School against the County Council.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Three books for teaching foreigners the English language: (i) *L'Anglais sans Maître* (*Méthode Thimm*). 128 pp. (Marlborough.) 1*s.* (ii) *English Lessons for Beginners*. By E. Paegle. 136 pp. (Riga: Romanowskaia, 62/64–8.) 85 kopecks. (iii) *A Primer of English for Foreign Students*. By W. C. Thorley. xiv+276 pp. (Macmillan.) 2*s.* 6*d.*—The first of these books is for French students, as the title indicates, and this is the fourth edition, *revu et agrandi par M. H. Hébert*. It has the familiar features of Marlborough's Self-taught Series, including the weird "phonetic transcription" which represents *think* by *thigne-que*, *across* by *eu-croce*, and *coverlets* by *keuvveur-letce*. Tourists who have no leisure to study the language properly will doubtless find the book useful; it certainly contains a convenient collection of words and phrases. Mr. Paegle's book is intended for Russian children; it owes a good deal to Prof. Rippmann's "First English Book," although the indebtedness is not acknowledged. The book would have benefited if it had been submitted to a competent Englishman, for there is a good deal that is unidiomatic. Thus we find sentences like the following: "A great many artisans are busy to build a house. Let us go better into the garden. Here we alighted the omnibus." There is also a considerable number of misprints. A good feature is the use made of phonetics, the absence of which is one of the very few defects of the third book under consideration. Mr. Thorley's book is indeed very good—far superior in point of method to the two other books. The ideas expressed in the preface are thoroughly sound, and the execution shows that Mr. Thorley has had extensive experience with adult pupils, for

whom this book is intended. The reading matter is very well chosen, and the exercises are also good. It is a book that may be recommended without reserve.

Bell's French Picture Cards. Edited by H. N. Adair. (Bell.) Sixteen cards. 1*s.* 3*d.* net.—These cards represent scenes of French life drawn by Miss Mary Williams. They show a railway station, a class-room, a pillow fight, &c. The drawing is sometimes a little queer; but they do not lack interest, and may well help to enliven a French class. On the back of each card are a *questionnaire* and grammar exercises which are mostly well expressed. We do not quite know how the pupil is to "put suitable prepositions for the dashes in the sentence: Le château est — — — jardinier. La faux est — jardinier."

Le petit bonhomme Pierre. Written and illustrated by Lottie King. 77 pp. (Longmans.) 1*s.* 4*d.*—This is a very odd book. It contains an illustration on every page, in which the human beings are represented, or rather suggested, in red in a manner which might be imitated by using matches and peas. The inanimate features are in black, and very roughly drawn. There is some humour, but very little art, about these "illustrations." The text is very brief and not always edifying. What is gained by representing a boy as smoking a pipe in the playground during the morning interval, or as suffering from *mal de mer*? It is suggested in the introduction that "the idea" of such illustrations "can be largely extended in the hands of a teacher." We are inclined to think that it would be well to abstain from drawing if the results are no better than this.

J. J. Rousseau, Julie, ou la Nouvelle Héloïse. Edition abrégée avec préface de F. A. Hedgcock. xx+216 pp. (Dent.) Cloth, 1*s.* 6*d.* net; leather, 2*s.* 6*d.* net.—This recent addition to the very attractive series "Les Classiques Français" offers the story of "Julie" without Rousseau's many digressions. If the work loses as a sociological study or a study of Rousseau's personality, it gains as a novel. Mr. Hedgcock has contributed a pleasant introduction, and in its present form "Julie" will find many readers who would have shrunk from the book unabridged.

History.

Histoire de la Nation et de la Civilisation Françaises. Par E. Driault et H. Sée. 330 pp. (Paris: Picard.) 1.50 francs.—Here is an elementary history of France intended for use in French schools in which more importance is given to the development of the national life than to the wars and dynastic matters. The story is simply and clearly told, and there is an abundance of supplementary matter in the way of maps, pictures, questions, summaries, suggestions for essays, &c. It would be a useful book for classes which want practice in French reading; and our only complaint is the old one that French writers never seem to understand the position of the Emperor in European history to the end of the eighteenth century as we have been taught by Drs. Bryce and Freeman to regard it. On the other hand, we note with pleasure that the authors do not glorify Napoleon, and tend to deprecate the desire for "glory" which used to dominate the French nation.

Stories from Modern History. By E. M. Wilmot-Buxton. vi+122 pp. (Methuen.) 1*s.* 6*d.*—Miss Wilmot-Buxton's history is not always quite correct, especially in the seventeenth and eighteenth centuries; she uses the phrases "Empire of Germany," "Empire of Austria," before there were such empires; and there are other points on which we might comment—*e.g.*, the astronomy on p. 61 (l. 6). But she can tell a story well and in an interesting manner; and in this book twenty-four such stories are told, chosen from various periods from the fifth to the nineteenth century, and attached to some famous name of each period. Perhaps we should not attempt to deal so largely with European history in the case of those for whom the book is intended. But it will be a good book to put into the hands of intelligent children, and will do more than make them familiar with famous names.

Highroads of History. Book VII. 304 pp. (Nelson.) 1*s.* 6*d.*—We have already noticed several books of this series, with their coloured and other pictures. This is on the same lines as the others, and deals with the whole of British history. Besides the features common to the series, it has an introductory poem by Rudyard Kipling and an epilogue by Lord Rosebery.

A School History of Hampshire. By F. Clarke. 256 pp. (Clarendon Press.) 1*s.* 6*d.* net.—Without reflecting in any way on other books in this series, we can say that this is certainly the best of them. The author confines himself almost entirely to the history of the county, yet the history of the country is fully reflected therein from geological times to the present day. Especially happy is the treatment of the later Middle Ages, with its chapters on the commons, the lords, and the clergy. For dwellers in the county it is an admirable book, and to them the supplementary chapters on the schools of Hampshire and on Hampshire writers will be interesting. For the general reader, perhaps the most useful chapter will be that on royal hunting grounds, in which he will learn something on the meaning of a "forest." Pictures abound.

First Lessons in English History. viii+101 pp. (Bell.) 10*d.*—Though the preface claims that "some attempt has been made to link the different lessons and to give a general notion of the history of the country," there are many gaps. There is nothing of the history from 1346 until 1450, thus omitting Henry V., and nothing again from 1485 until 1550 (*circa*), thus omitting the reigns of Henry VII., Henry VIII., and Edward VI. But room has been found for George Stephenson; and the stories in this book are well chosen and pleasantly told so far as they go. There are a number of useful pictures and a summary of the lessons.

Mathematics.

Co-ordinate Geometry. By H. B. Fine and H. D. Thompson. x+300+viii pp. (New York: The Macmillan Company.) 6*s.* 6*d.* net.—This book provides a compact course in elementary co-ordinate geometry, twelve chapters being devoted to plane geometry and six to solid. The method of treatment closely follows the usual lines, and within the limits imposed it is thorough, much help being given to students by the large number of worked examples. In the chapter on the straight line, oblique axes are considered at the outset, but in the later part of the chapter, and throughout the rest of the book, rectangular axes are used almost exclusively. The equations of the second degree are analysed, and the results tabulated in a complete manner. Only a few pages are devoted to systems of conics and polars, and although the properties of the several conics and conicoids are minutely studied, the authors have refrained from developing the relations between them or discussing the more general aspects of the subject. There is a chapter on the equations and graphs of some of the better known plane curves.

At the end of the book are nine full-page reproductions of photographs of models of the conicoids. The book seems to us specially suitable for students of engineering or science who study the subject on account of its practical utility, but it would also furnish a good first course for those who intend to specialise in mathematics.

Primer of Statistics. By W. P. Elderton and E. M. Elderton. viii+86 pp. (Black.) 1s. 6d. net.—Modern statistical methods have acquired such prominence in biological and sociological investigations that the publication of this little book will be welcomed by many who are interested in these matters, but whose knowledge of mathematics is too slender to permit them to understand either the processes or the results of such investigations. Here they will find explained in a clear manner the meaning of variates, medians, quartiles, means, modes, standard deviation, correlation, probable error, while there is no mathematics other than simple arithmetic. The interest of the subject is centred around correlation, and work of some value to educational science might be done by teachers in ascertaining the relationships existing between the various mental and physical characteristics of their pupils; but in all such work it must ever be remembered that the results relate only to crowds, and must be applied with very great caution (if at all) to individuals. We expect this book will increase the number of workers in this fascinating subject.

Science and Technology.

Electrotechnics. By Dr. J. Henderson. 165 pp. (Longmans.) 3s. 6d.—This laboratory handbook forms vol. iii. of the series of physical and electrical engineering laboratory manuals prepared by the same author. It is divided into three parts, corresponding roughly to a three years' course. The first part contains experiments corresponding to the elementary stage of the City and Guilds syllabus in electrical engineering, the second and third parts to the direct-current and alternating-current sections of the ordinary grade course of the same syllabus. The text is confined entirely to instructions for specific experiments. The details of each experiment are preceded by more or less extended preliminary information, which tends to ensure that the student approaches the experiment with an intelligent idea of its purpose. This course of work can be recommended as admirably suited to the requirements of junior students of electrical engineering.

Direct and Alternating Current Testing. By F. Bedell and C. A. Pierce. 265 pp. (Constable.) 8s. net.—The authors have arranged systematically in this volume a series of tests on direct-current generators, direct-current motors, synchronous alternators, single-phase currents, transformers, polyphase currents, phase changers, &c. By giving a complete presentation of a few typical tests, the authors have been able to discuss fully the principles underlying each test and the significance of the results obtained. The volume will be of much service in advanced courses in electrical engineering.

Keartons' Nature Pictures. Part I. To be completed in 24 fortnightly parts. (Cassell.) Each part, 1s. net.—The photographs of birds and other living things taken by the Brothers Kearton are acknowledged to represent the high-water mark of nature portraiture. These pictures are to be reproduced in photogravure, colour, and half-tone in a sumptuous work, of which the first part is before us. The descriptive text is supplied by Mr. Richard Kearton; and we cannot imagine a work which will give more genuine delight to anyone interested in animate nature than that of which the publication has just commenced. By adding the work to the school library, science and education will be rendered good service.

Preliminary Mechanical Drawing. By Joseph T. Treleaven. 40 pp. (Longmans.) 1s. 6d.—This little book is intended to provide a first course in mechanical drawing for scholars in day and evening schools who have already attained some knowledge of plane and solid geometry. The book contains fifty-four figures, twelve of which are coloured. These figures serve to illustrate a course including the construction of regular figures and their application to pattern drawing, the drawing of simple solids including their sections and the projections of simple machine details. The author suggests that the best practice is obtained by the scholar first sketching any familiar object to be found on the school premises and inserting the actual dimensions on the sketch; the drawings should then be made from these sketches. Undoubtedly this is a good plan when intelligently worked out; it may in many cases, however, lead to a pupil becoming familiar with the outside only of an object when the interior is by far the more important. For example, Plate XVI. shows the plan and elevation of a stop-cock for a school radiator; no section is given and there is no explanation of the use of the various parts. Plate XV. shows a gas bracket having a tap in which the all-important washer between the screw and the small end of the plug has been omitted. Plates XI. and XII. show bolts in which no "draw" has been allowed for the nuts; the latter illustration is especially bad, representing a pair of flanged plates connected with bolts having nuts run right up to the end of the screw. Two screws shown on p. 20 have too great a slope shown for the threads. The author recommends on p. 3 that drawings should first be made in pencil, then coloured, afterwards shading round, and other parts with pencil; finally, the lines are to be inked in. This method is unusual with draughtsmen, and we note it is somewhat contradicted by the author at the foot of p. 12. The earlier illustrations in the book are distinctly good, and should be helpful in the transition from text-book geometry to drawing-board problems and methods.

The Elements of Organic Chemistry. By E. I. Lewis. viii+224 pp. (Clive.) 2s. 6d.—This course of practical and theoretical organic chemistry is intended for use in the upper forms of schools and for those about to study medicine or scientific farming. It contains the knowledge usually required for entrance scholarships at the universities. It deals in Part I. with a small number of typical substances which illustrate the most important reactions of aliphatic compounds. Alcohol is prepared and purified, its physical and chemical properties studied, and its formulæ, empirical, molecular, and structural, obtained. On the various reactions of alcohol with sulphuric acid are based studies of the ethyl sulphates, ether, and ethylene. Then follow chapters on the oxidation products of alcohol and on the alkyl halides. The latter lead to the paraffins themselves. In Part II. we meet with the chief classes of aliphatic compounds, dealt with in a more general way. Chapters are included on stereo-isomerism and on the carbohydrates. The third section of the book, which is shorter, contains accounts of a few of the aromatic compounds, while in the final section some description is given of organic analysis, qualitative and quantitative, and of the determination of molecular weights. This book has many good points. Its general plan is that which most teachers nowadays would adopt. Suggestive ideas are

chosen, round which are grouped the contents of the chapters. The details show the possession by the author of a thorough and practical acquaintance with his subject. Nevertheless, the book is hardly one which we should with confidence place in the hands of a schoolboy, or, indeed, of a beginner of more mature years. Everywhere, even in the first part, which deals with selected types, the text is overburdened with detail. Thus it can hardly be necessary that, in an elementary study of alcohol as a typical substance, an account should be given of the different enzymes by means of which fermentation takes place. Finally, the attempt is made to cover too wide a field. As a result, especially in the general sections, compression is carried much too far, and expressions are used which will certainly be unintelligible to the elementary student. We fear that the result of this mass of fact will be to bewilder such a reader. It will certainly prove an obstacle to his obtaining that clear bird's-eye view of the subject which is so essential to the beginner, which, in reality, it should not be difficult for him to gain.

Pedagogy.

Habit-formation and the Science of Teaching. By Stuart H. Rowe. xvii+300 pp. (Longmans.) 6*s.* net.—No subject could exceed in importance that of which Dr. Rowe treats in this volume, so far at least as concerns the business of the teacher. There is so much truth in the adage "character is a bundle of habits," that it is difficult to account for the smallness of the pedagogic literature upon the subject. The psychologists have done their duty by it, and the modern study of individual psychology has brought out strongly the different degrees of rapidity with which we improve by practice and the varying tenacity with which acquired improvement is retained. The psychological theory of habit and its relation to instinct has received abundant attention, but it remained for the author of this volume to work out the subject in detail for the practical use of the schoolmaster. We have had Radestock for nearly thirty years; but that little book is deficient on the practical side. It is unfortunate that the word should commonly call to our minds merely those automatisms in our daily life which make it possible for men to live together in decency and comfort. Cleanliness, punctuality, honesty, civility, and the like are, of course, of fundamental importance, but to think of these as resting upon habits, and to overlook the fact that many dexterities which are acquired at school are equally if not more automatic in character, is sure to lead to confusion of method in dealing with them. Thus intelligent reading rests upon the habit of getting meaning out of a printed page. What a load of difficulty would be removed from the teacher's later work with his pupils if this were the ground idea of all reading lessons, even from the first! The personal appeal which books make to a child who has been rightly taught is often lost completely in the cases where initial work is divorced from sensible meaning. In not a few of our school exercises we only make progress by breaking down habits which in the early stages we are at pains to set up. Dr. Rowe's treatment of the subject is full of good things. He brings to bear upon it a full knowledge of the modern laboratory researches of the psychologist, though he realises the limitations of such work and the necessity of further inquiry under the more complex conditions of school and home life. Students will find the analysis of the habit-forming and habit-breaking process clear and helpful. Experienced teachers will hardly read it without getting a better understanding of many familiar facts of their class-room life. Moreover, they will find in it much that will throw light upon the failures which trouble the most successful of us. The book closes with an admirable bibliography, to which many guiding references are made in the text.

Miscellaneous.

(1) *Historical Plays for Children.* By Amice Macdonell. (Allen.) 2*s.* 6*d.*

(2) *The Water Babies.* By Lucy Chater. (Sonnenschein.) 6*d.*

(3) *The Rose and the Ring*, by Ethel Sidgwick, and *Cinderella*, by E. Nesbit. (Sidgwick and Jackson.) 6*d.* each.

(4) *The Guild of Play Book.* By G. T. Kimmins and M. H. Woolnoth. (Curwen and Sons.) 5*s.*

The author of four "Historical Plays for Children" (first series, "Alfred the Great," "Robin Hood," "The Armada," and "The Enterprise of the Mayflower") is evidently practised in stage-management as well as versed in history. This happy combination, together with some skill in draughtsmanship and a pretty talent for verse, has resulted in the production of the best set of modern school plays that we remember to have come across. Each contains, as a school play should, a considerable number of characters, minor and major, and each could be performed in about an hour and a half. Though the object is mainly for edification and instruction, the author's interest in drama preserves her from the failing of over-seriousness and pedantry, while her innate good taste avoids the other extreme of over-frivolity. Miss Macdonell's style is simple and literary, and commendably sparing of the tiresome archaisms that are too often the staple of the historical novel or play. She has wisely utilised legendary as well as strictly authentic material, and has thus added life and spirit to her scenes. At the same time, a sound acquaintance with archæology brings them sufficiently within the range of scholarship to give a genuine impression of the periods dealt with. We can hardly imagine any occupation more truly educative than the careful production by children of one of these plays in correlation with the lessons in history and literature, or in needlework and handwork for the making of costumes. The inclusion of dance and song is another good feature, while the useful illustrated directions for *cheap* costume and scenery ought to bring the work within reach of the poorest schools. Many teachers have been searching for years for such plays, and it is to be hoped that a cordial welcome will be extended to this volume, so that publishers may be encouraged to increase the supply. We would only suggest that the price of the book itself (2*s.* 6*d.* net) would be a serious consideration where many copies were required. Possibly a cheap edition, omitting stage directions and pictures, &c., might be ultimately forthcoming.

Cheapness as well as other merits are the mark of Messrs. Sonnenschein's standard plays for schools, to which Miss Lucy Chater's "Water Babies" is a pleasing and attractive addition. It is intended, in the first instance, for the kindergarten, but children throughout the preparatory-school age would enjoy it. Kingsley's story is skilfully given in a few simple scenes, with very little alteration of the text.

Messrs. Sidgwick and Jackson are also producing a sixpenny series on somewhat the same lines, the two volumes before us being the first of a well-thought-out scheme for simple, childish pieces with songs adapted to old familiar airs. Miss Ethel Sidgwick's version of an old favourite, "The Rose and the Ring," has the essential merit of not

tampering with the classical text, and Mrs. Nesbit's "Cinderella" is competent and amusing.

Finally, a word must be said for "The Guild of Play Book," the outcome of well-known efforts to brighten the lives of poor London children and to capture their taste for lovely things. It contains music, songs, and dances (with instructions for steps) suitable for various festivals, besides a short masque. Every portion of the work has been well tried, and nothing remains for the reviewer but to wish the movement continued success. Of this it will be well assured so long as the promoters and authors of this book are concerned in the work.

These books one and all testify to the great strides that have been made in recent years towards the revival of wholesome, rational, and beautiful amusement, and the recognition that play and plays are a necessary part of life.

The Public Schools Year Book, 1910. Edited by H. F. W. Deane and W. A. Evans. xciii+737 pp. (The Year Book Press.) 3s. 6d. net.—The twenty-first issue of this useful work of reference is fittingly signalised by the adoption of the "Year Book" as the official book of reference of the Headmasters' Conference. After an account of the work of the conference, the book provides full particulars of all recognised public schools, and these are followed by a full description of entrance scholarships and examinations, and the conditions of admission to the Navy, Army, Civil Service, and other professions. The "P.S.Y.B." has long been useful to educational workers; in its improved form it will be indispensable.

CORRESPONDENCE.

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

The Correlation of Mathematical and Science Teaching.

In Recommendation (iii) of the report of the Joint Committee (published under the above heading in your February number) we read: "When the subject of areas is approached in arithmetic, the first question should be such as the following: 'Draw a rectangle 4 inches long and 3 inches wide; divide it into square inches; of how many square inches does the rectangle consist?' Hence lead up to the method of finding the area of a rectangle."

In Recommendation (ii) it is suggested (in a footnote) that measurement of volume should be approached by building up rectangular blocks with inch or centimetre cubes.

Thus it is suggested that, in the case of areas, we are to proceed from the whole to the unit, and in the case of volumes from the unit to the whole. As the two processes are fundamentally different, it may be worth while to inquire whether one or the other is really more helpful to the learner.

The following is a quotation from the article on "The Fundamental Principles of the Teaching of Number," published also in your February issue (p. 54): "Let me caution you against beginning with 'one,' notwithstanding the advice given by the advocates of a certain system to begin by 'driving home the notion of unity.' . . . To expect a child to pass from the notion of three and one to the notion of four, or from the notion of three and two to the notion of five, would be like expecting him to predict that blue mixed with yellow will give green. If you want him to understand the relation $3+2=5$, you must begin with a 5-group, separate it into a 2-group and a 3-group, and the relation $3+2=5$ will at once emerge. This process of 'parting and wholing' is of the utmost importance in early number lessons."

It may be said that we are not concerned with teaching numbers (at the stage considered in the report), but we are teaching measurement, and measurement of a new kind. The following is a quotation from Prof. J. Welton's "Principles and Methods of Teaching" (p. 418):

"Measurement we have seen to be the dividing of a whole into parts, and the counting of the parts to evaluate the whole. This principle of measurement should be carried out from the beginning in all teaching of number. The child should take a whole thing, and with his hands divide it into parts. At first it will be two parts, then three, then more. To begin with one object and proceed to two by adding another, and so on, is not measuring. No true idea of number or of unit can come out of such a mode of teaching. The Froebelian cube should not be built up out of its parts by adding one to another. . . ."

It is difficult to use a rectangular block of a material which can be divided up in class into cubic inches or centimetres. We can give the learner a rectangular block already built up of cubes and tell him to divide it up; but in this case the unit is plainly visible from the first, and he is really proceeding from the unit to the whole. If there is any truth in the contentions of the writers quoted above, the unit should be led up to, not emphasised from the beginning, and we should not build up blocks of unit cubes, nor should we use squared paper in introducing rectangular areas (this, of course, would apply to work with beginners only; after a first introduction to the subject inch-cubes and squared paper could be used freely).

Dissatisfied with the method suggested (in the report) for volumes, not from any considerations such as those quoted above, but from practical experience of the method, I tried the following introduction to measurement of volume: The learner is given a unit cube and a rectangular block each of the edges of which contains the unit of length an integral number of times; he is told to measure the edges of the block and discover how many times the block would contain the cube. This problem can be varied considerably, and applied to solids of different shapes.

From a short experience of the working of this method I found it more satisfactory than the other, particularly when the pupil applied his knowledge to problems such as the determination of the number of bricks required for a wall, and later on when the volumes of prisms and pyramids were measured. The advantage seemed to be that the pupil was forced to visualise the division of the block into units, whereas if the units were supplied the counting could be done piecemeal.

It would be interesting to know if any of your readers have made a similar experiment.

The treatment of areas is, of course, easier; this is probably due partly to the inherent simplicity of a two-dimensional problem, partly to the fact that the counting must be done while the units are arranged in rows and columns.

E. W. P. Temperley.

St. Paul's School, West Kensington, W.

Mr. Temperley, I think, is quite right in his contention that Recommendations ii. and iii. of the Joint Committee as given in his letter will tend to a wrong idea of unit and of the process of measuring. It is true that pupils will in time by practical work reach some idea

of measuring a whole by means of a unit. It is as well, however, that such understanding shall arise because of the method of teaching rather than in spite of it. Mr. Temperley's suggestion is in this respect an advance on those of the Joint Committee. His method would keep the whole thing to be measured explicitly before the pupils' minds.

Other criticisms as vital as that of Mr. Temperley's can be passed on the recommendations of the committee. So far as I understand them, the pupils are to draw rectangles and to construct solid figures guided by the directions of the teacher. If so, then the recommendations exhibit a form of sham heuristic teaching that vitiates so much of the so-called practical work in science and mathematics.

What is gained by the pupils and not the teacher drawing the rectangle? Time is lost, attention is dissipated over unimportant details, instead of the mind being concentrated on the essential idea of the process. And is the idea any clearer when the pupils draw the rectangle? Less clear, surely, if concentration of time and thought are of any value in teaching. If doing takes the place of thinking, we have not gained, but lost by the method; and if the recommendations be closely examined, I think it will be found that thinking has been reduced to a minimum.

If the pupils are told to draw a rectangle 4 inches by 5 inches, and to divide it into squares, the whole process of measuring the rectangle is given to them. Though manually active in manipulating their pencils and rulers, they are mentally passively receptive. They exercise no ingenuity or initiative in discovering the process for themselves. On the other hand our ancestors, under the stress of necessity, invented units and a system of measuring, and our pupils should be faced with similar problems, and their ingenuity and initiative called out in solving them.

Suppose any irregular-shaped area be placed on the blackboard and the pupils asked outright how they would measure its size. Many suggestions will be given, most of them wrong; some with a grain of truth in them. Some pupils will suggest measuring the perimeter; others will point out the obvious objections to this. The teacher throughout invites free expression of opinion and criticism, and by judicious hints and pointed criticism directs the collective thought of the class towards the elucidation of certain fundamental ideas—*e.g.*, the difference between length and surface; length is measured by unit length, surface must be measured by unit surface. In such a process the pupils are not passive, but active; there is an atmosphere of free thought and suggestion combined with the necessary tonic of criticism, and the difficulties, illusions, and misconceptions of the pupils become apparent to the teacher.

The teacher then throws out other problems to be freely discussed in a similar manner. Such problems might be: What unit surface shall be taken? (Some suggest squares, others circles.) Which is the more convenient as a unit, a circle or a square? Will the same sized squares be used for measuring a desk top, a blackboard, and the class-room floor? Is it easier to measure a rectangular area or a space with irregular outline? How should a rectangle be divided into squares to measure it? How will the number of squares be calculated? &c.

The essence of the process outlined above is the encouraging of a free exercise of initiative and power of suggestion on the part of the pupils. The pupils are not asked to do until they have thought. Doing should come *after* thinking. When the pupils have thought out the rule of measuring, the teacher can set the class to measuring. Measuring squared paper? No, certainly not, but the desk tops, blackboard surface, window panes, door panels, floor space, and by calculating costs, given unit prices. If it be urged that groups of pupils will be walking about the class-room measuring things, I reply, so much the better for their health.

W. P. WELPTON.

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Independent Study in Schools.

I READ with much interest Miss Burstall's paper in your February number on "Independent Study in Schools." It is a promising fact that the best of our teachers incline more and more to the opinion that children should work for themselves, and not any more be "poured into like a bucket." But it seems to me that "independent investigation" is hardly the work for scholars under seventeen or eighteen; that would lead to waste of time and no very definite results. A plan of independent work which takes children, as it were, into partnership in their education, answers very well indeed; but the children must have books, their own books, and a considerable number of books, and no book should be set, I think, except upon its literary merits—a condition which rules out most publishers' lists of school books. It is probably a mistake to consider the cost of the books: parents buy these readily enough if they are made to feel that their children cannot be educated without them and if the books are of a kind to interest the parents themselves.

As for the "cost in time" of independent work (with books), on the contrary, the gain in time is very great; about four times as much ground is covered in half an hour's reading as in an oral lesson lasting the same time. The children's knowledge is continuous and coherent, there is no necessity to revise for an examination, and "howlers" are practically unknown. The dullest children profit most, because they become intelligent and know what they know, though they may not overtake their brighter companions. The gain of time is so great that it is possible to get into the short school time of three or four hours a day a number of subjects generally excluded for want of time, such as art studies, nature knowledge, handicrafts, and classical and general history. Children between the ages of nine and twelve easily study a score of subjects (or rather divisions of subjects) in as many books; from twelve to fifteen a still wider curriculum and more books are used, and from fifteen to seventeen or eighteen as many books, but of a rather different *calibre*.

When the term begins each child makes a copy of his time-table, and divides the pages to be covered in the term by the number of lessons in each subject. Then, for the future, he is responsible for having the right books in his locker each morning. As for the lesson, the child reads either to himself or to his teacher, as may be most convenient. Explanations are strenuously avoided unless the child asks for them, because a good book explains itself, and if the scholar chance on a word or a phrase he does not understand, he holds it over, as it were, until illumination comes later. The principle that once reading is enough for any passage in history, some sorts of literature, travel, geography, &c., suitable for the child's age, becomes established very soon. No effort is necessary to interest children or to keep their attention, because a direct appeal is made to the desire for knowledge which is innate in children. Children under nine have their lessons read to them; above that age they read for themselves, either aloud or silently; but every lesson *must be reproduced*. The children need not write much when they have the matter in their books,

but may be called upon to write on some test point—some paragraph singled out by the teacher. It is worth remarking, incidentally, that the labour of "corrections" is enormously reduced.

More often it may be convenient to call on the class, turn by turn, to narrate the whole or part of the matter they have read. This is not an act of verbal memory, after a single reading, but is the result of a process of mental digestion in which all sorts of "faculties" are concerned. We can test ourselves upon a leader in the *Times*, which we shall find we can reproduce in our own words only in so far as we have digested the argument. But everything depends upon the right books. These must be living, first-hand books, with as much style as is suitable for the subject. There must be no writing down to the children—the best books of the best men are not too good for them. It is quite unnecessary to teach composition, when this method is followed, until the pupil is seventeen or eighteen; he writes very good English, and, as he uses many books, a scholar does not form his style upon any one author.

I may not quote my own experience, but venture to offer it as my excuse for urging upon teachers a method which appears to me to contain the promise of our educational salvation. At present we are in danger of turning out illiterate persons in the sense that, though they may read glibly enough, they are without intellectual pleasures and interests, and are incapable of getting the substance out of such books as they read. This sort of teaching can only be carried on by teachers of intelligence and education: and it does not by any means exclude oral lessons; these have their place in introducing, amplifying, and summing up some section of a subject, while, in mathematical and linguistic work, the scholars' dependence upon their teachers is very great.

CHARLOTTE M. MASON.

WE must all feel that Miss Mason's statement of her own experience of independent study by children is a valuable contribution to the discussion of the subject. In the papers of the Parents' Educational Union there have appeared very remarkable results from the reading method as opposed to the oral method.

You will perhaps allow me to say, however, that the children dealt with seem to belong to a special class, socially and intellectually. A child brought up in a cultivated home, and accustomed to books, *can* do the work Miss Mason describes; one sees it with individual children in the families of university people; and clever pupils with scholarships from public elementary schools, if they are properly selected, can learn, though with special instruction, to do the same sort of thing.

But this system Miss Mason advocates could not, I venture to think, be applied in school generally with the average child, who very often finds it extremely difficult to understand ordinary good books of the type of Macaulay or Scott. It is for these average children that the publishers bring out the modern type of school book, where things are made simple. Our English population is much more varied than Miss Mason seems to realise, and in a great many homes, both rich and poor, well-bred and the reverse, there is very little intellectual life or abstract thinking, and the children of these homes cannot work alone.

The consideration of the cost of books, which Miss Mason calls a mistake, is absolutely forced upon anyone who has to deal on any large scale with the average parent. There are many well-to-do parents who object seriously to the cost of school books. Ruskin and others have pointed out again and again how even wealthy English people will not spend money on books. On the other hand, there are many, many cultivated families who desire a good education for their children, and whose means are so limited that the cost of absolute necessaries at school is a serious burden upon them; it may mean going without a servant, or going without a Sunday dress for the mother, or a great-coat for the father. One cannot ask parents who make such sacrifices to spend any more than the absolute minimum on text-books.

One is glad, however, that the value of Miss Mason's plan should be emphasised, since at present the schools are tending too much in the direction of oral work, and our young people of every class are too often, in the true sense of the word, illiterate.

SARA A. BURSTALL.

Manchester High School for Girls.

Clerks' Caligraphy.

GREAT interest has been aroused, not only among clerks, but also in the teaching profession, by the recent scathing remarks by Mr. Maberley Phillips and Mr. F. Huth Jackson at a meeting of the Institute of Bankers in respect of junior bank clerks' deficiencies. Both gave personal adherence to the view that many of these juniors cannot write a good hand. Mr. Huth Jackson, speaking as a director of the Bank of England and partner in a City banking firm, especially deplored that this defect is most marked in the case of youths coming from the great public schools, and he expressed the hope that more attention would be devoted by teachers to the development of this faculty.

With your permission I should be glad to have the opportunity of pointing out that this question has not been ignored by those who, for the past quarter of a century, have been constantly working to improve the standard of efficiency, not merely of those destined for, but of those who have already embarked upon, a business career. It is not my purpose to enter into a review of the higher standards which have been aimed at in matters of general all-round knowledge necessary for the more highly organised commercial conditions of to-day, but I may recall that complaints as to handwriting figured prominently in the very earliest protests against the deficiencies of British when contrasted with foreign clerks.

To what is the prevalence of bad and careless handwriting to be traced? In part, no doubt, to school neglect of the subject, and, subsequently, to the ever-extending use of mechanical writing appliances. But, as Mr. Huth Jackson pointed out, "pass books have still to be written up by hand, and therefore good handwriting is still the prime necessity for the average clerk in a bank." The same, exactly, can be said of the average clerk in a commercial office. The element of rush, however, which has appeared and is developing in business, has simultaneously developed careless caligraphy; in the desire for speed all regard for legibility is thrown overboard, and even one-time good penmen deteriorate.

Many excellent writers were produced in the old dame-school days, when rotundity in formations was secured by a long course of pot-hooks and hangers. Wasteful flourishing has been banished in a great measure, but the equally bad characteristic of excessive angularity tends to increase. What ought to be aimed at is clearness above everything; the early correction of careless letter constructions—an adaptation of *any* style to legibility; there are multitudinous styles which offend against all the canons of copper-plate script, but which, nevertheless, fulfil the essentials of good handwriting.

For several years past I have acted as examiner in handwriting at the London Chamber of Commerce Commercial Education examinations. Handwriting is one of the *obligatory* subjects; and a significant note appears in the syllabus—that "no pains should be spared in seeking to meet the requirements of commercial houses in respect of handwriting."

Unless it were possible to offer a practical suggestion there would be no useful purpose served by this letter. I believe it to be true that handwriting has been neglected as a "subject," and not given its proper prominence as an essential qualification for success in commercial life. A certificate indicating a pass in this subject, under the ægis of the London Chamber of Commerce, would be a good proof of more than average proficiency. Why, therefore, should not the boards of banks, insurance, and other companies and commercial houses generally, make it a *sine qua non* for all applicants or nominees for relatively minor positions to possess that certificate? Would not this be a reasonable way of relieving members of those boards, and principals generally, of the tiresome task of eliminating the "undesirables" or "inefficients"? It would, at least, have the direct effect of compelling youths to become proficient in their own time and not in that of their employers. It may be objected that an examination only held once a year would not meet the requirements of the case; true, but I have little doubt that it would be found feasible to institute a monthly or other periodical examination in this single subject. The means already exist for meeting a well-founded grievance; it is for those who suffer from it to decide whether they will adapt those means to their own ends.

C. E. TOWN.

New Barnet, Herts.

Classification of Pupils according to Ability.

IN the Regulations for Secondary Schools issued by the Board of Education, reference is made to the question of differentiation of boys in senior classes, and an indication is given that the attitude of the Board is favourable to schemes which meet local needs and are "consistent with a broad and solid general education." Any policy of this kind demands an answer to two questions: the question of promotion and the question of the selection of the subject-matter.

As regards the first, a choice between terminal and annual promotion depends chiefly on the size of the school. In a paper read at the winter conference of the L.C.C. Education Committee, and published in your last issue, Dr. Spenser, of University College School, advocated promotion twice a year, at midsummer normally and at Christmas for the clever pupil. By a curious and exceptional chance, the writer was subject to a variant of this. To explain the working, let us consider a school divided into a lower division (Classes I. B, I. A, II. B, II. A) and an upper division (Classes III. B, &c.). In both promotion was normal at midsummer, but in the upper division exceptional promotion took place at Christmas and in the lower at Easter. The system is very elastic, as will be seen from the case of the exceptionally clever boy who makes the transition from the retentive stage to the reasoning one quickly:

Midsummer, 1910, from I. B to II. B.
Easter, 1911, from II. B to II. A.
Midsummer, 1911, from II. A to III. A.
Christmas, 1911, from III. A to IV. A.

This is an exceptional case, but it might occur. The writer, under such a system, went from Class II. to Class V. in fifteen months. In Germany the following scheme has been put forward, if not acted upon. It is allied to Dr. Sickinger's Sonderklassen as applicable to a school where the stragglers are cut off at the commencement.

The school is divided into two schools, called A and B. Promotion takes place in school A at Easter and in school B at Michaelmas. Every boy gets promotion at the due date. If satisfactory, he joins the higher class in the same school; if not satisfactory, he is transferred to the class of the same name in the other school. If two transfers become necessary in a twelvemonth the pupil must leave.

As regards the second point, the selection of the subject-matter, foreign experience is conveniently summarised in the two words Uebersicht and Einsicht. In Switzerland, where cantons group secondary pupils in one large school, the latter is split up into separate commands at about the age of fourteen or fifteen, and the pupil has to choose between a Literargymnasium, a Realgymnasium, an Oberrealschule, and a Handelsschule. This means that the pupil must choose his profession before the age of fifteen.

It is then possible to group the work so that each school covers the same ground, but at different depths. Thus, in mathematics, we find a Literargymnasium which gives three hours per week to the subject abreast of an Oberrealschule which gives nine.

In Austria the following plan is advocated by Dr. Raschke. For each subject of the curriculum a minimum syllabus is drawn up. It contains the minimum that ought to be known by an educated man who does not expect the subject to bear directly on his life-work. Every pupil has the right to choose the minimum syllabus in a certain number of subjects; in the others he must follow the normal curriculum. Minimum and normal classes will be taught simultaneously by different teachers in separate rooms.

Such a scheme appears to give the indolent a welcome opportunity if no external examination afford a stimulus. This reflection seems to show that the two questions depend on the character of the external tests. The introduction of a leaving certificate is making progress in Great Britain, but the final and best form is still wanting. We shall never be free from external worry until this certificate is awarded on the results of the school's examination conducted by the teachers themselves under the direction and inspection of experts chosen by the body granting the certificate.

P.

The Modern Language Association and Terminology.

I OBSERVE that in an article in your February issue on the interim report of the Joint Committee on Terminology you say that the Modern Language Association at its annual meeting expressed its approval of the report.

This is a mistake. The association discussed but expressed no opinion on it, favourable or otherwise.

G. F. BRIDGE (*Hon. Sec. M.L.A.*)

As one who was present at the annual meeting of the Modern Language Association, I certainly received the impression that, although no formal resolution was passed, the general trend of the discussion on the interim report on terminology was favourable.

THE WRITER OF THE ARTICLE.

Prof. Titchener's "Text-book of Psychology."

I AM very grateful for the many kind things that your reviewer has said of my little "Text-book of Psychology" (vol. xii., p. 18), and I cannot complain that he finds my definition of mind "wholly objectionable" and "profoundly

unsatisfactory." Students of psychology are no more agreed as to the preliminaries of their science than are students of physiology or of general biology; when all the facts are in, there is still room for honest difference of opinion; and we can only hope that the clear recognition of this difference may prompt to renewed investigation, and so hasten rather than delay the progress of knowledge.

There are, however, two points in your review against which I think I have some right to protest.

(i) The first is the charge of wholesale inconsistency in the introductory essay. Your reviewer is good enough to excuse my blunders on the score of hasty writing. I am not sure that hasty writing is an excuse; I am sure that it has never before been offered on my behalf. No; the fact is, simply, that my critic has, doubtless by my fault, missed the plan of the chapter. A text-book of psychology, without qualification, means nowadays a text-book of the psychology of the normal, adult, human mind. I begin, therefore, with a discussion of the subject-matter and the method of this human psychology. But then, instead of proceeding at once to the discussion of my third introductory point, the problem of human psychology, I interpolate two sections—on the scope of psychology and on the use of analogy in psychology—in which I seek to show that we may have a psychology of the animal, of the social and of the abnormal mind, and that the method of these other psychologies is essentially the same as the method of normal human psychology. There is no inconsistency; if the reviewer will regard §§ 7, 8 as of the nature of a parenthesis, everything will be in order.

(ii) The reviewer asserts that, in a special illustration, I "quite ignore the fact that what we commonly call the taste of a thing often includes its characteristic 'feel' to the tongue." If, however, he will turn to § 34, he will find that the touch-components in taste are explicitly recognised, indeed, are worked out in some detail; I might even say, perhaps, without boasting, that the nature of these components has been established, in some small measure, by work done in my own laboratory. But, this apart, the reviewer is flatly in error as regards the particular instance under discussion. It is not possible to discriminate by touch, with the nose closed, between fragments of apple, onion, and raw potato. The reviewer may make the experiment for himself or, if he prefer authority, may turn, *e.g.*, to Prof. Myers's "Text-book of Experimental Psychology," where he will read: "If, while the nostrils are held, small pieces of apple and onion are alternately chewed, it is impossible to distinguish them." E. B. Titchener.

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Prof. Titchener's kind letter does not seem to me to meet the difficulties raised in the review of the book in question. It is surely not legitimate to lay down a definition, and then to extend it, even in a parenthesis, without pointing out the fact that circumstances demand the extension. Would Prof. Titchener also defend the contradiction between his "parenthetical" statement that there is reason to attribute mind to animals which have no nervous system with his subsequent assertion in § 9 that "a nervous system explains mind"?

The second point raised by the author illustrates very aptly the objection taken to the statement in the text. It was cited as a departure from rigid accuracy which was to be regretted in a standard book. In Prof. Titchener's letter he writes exactly what he should have written in his text. The emendation puts it right, and it becomes little more than a psychological commonplace. Yet it remains true that I can distinguish "onion from potato" by touch with the nose closed, unless the onion is first reduced to fragments, thereby destroying the characteristic "feel" of the onion. The Reviewer.

Resultant of Parallel Forces determined Graphically.

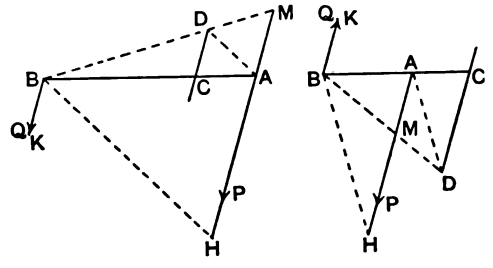
This is a simple particular case of the general problem for non-concurrent forces as treated in any text-book.

Let AH represent the force P and BK the force Q.

Draw MA equal and parallel to BK; MAH is the force polygon.

Join BM, BH, and draw AD parallel to BH; BAD is a funicular polygon; the resultant of P and Q acts through D, and is represented in direction and magnitude by MH.

Draw DC parallel to MH; DC is the line of action of the resultant of P and Q.



It is easily seen by the triangles ABH, MBA, that the forces P, Q are equivalent to MB along MB and BH along DA. These two forces by the triangle MBH are equivalent to the force MH acting along DC.

Also

$$\frac{BC}{CA}=\frac{BC}{CD}\cdot\frac{CD}{CA}=\frac{BA}{AM}\cdot\frac{HA}{BA}=\frac{HA}{AM}=\frac{P}{Q}.$$

For Mr. Roberts's second problem in his letter in the March issue of The School World—given the three lines of action and the magnitude of the resultant R—it is only necessary to draw MH to represent R in magnitude and direction. Take any point B in the line of action of Q, join BM, cutting the line of action of R in D, draw DA parallel to BH, then MA represents Q and AH represents P. Cecil Hawkins.

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The School World.

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THE CROWN, THE LORDS, AND THE COMMONS.

By EPHACH.

JOHN STUART MILL used to urge with much force and effect that one of the chief virtues of representative government is the educative work which it silently but ceaselessly carries on in the electorate. It supplies the mental training which comes of the consideration of the pros and cons of complex political problems; it furnishes the moral discipline which is necessarily involved in the responsibility for the administration of an extensive empire. There can be no doubt that politics have during the reign of King Edward VII. been educative to an unusual degree. The economic questions which have to be answered by those who try to understand the issues at stake in the struggle between Free Trade and Tariff Reform are as difficult as any that can be asked outside the region of pure metaphysics. The wits of thousands of voters have been sharpened by their efforts to comprehend the arguments of fiscal disputants, even though those efforts have been largely unsuccessful. Scarcely less hard of solution are the legal problems which arise in connection with the proposed changes in the land laws, or the sociological conundrums which present themselves to those who debate the policy of an extension of the franchise to women.

During the last few months, however, all these matters of current political interest have been superseded in importance by a problem that is essentially historical in its nature, viz., the problem of the relation existing at the present time between the Crown, the Lords, and the Commons. The leaders of the parties in the Houses of Parliament, the orators who stump the country, the writers who fill the columns of the Press, the voter who ponders what he shall do at the forthcoming General Election, all turn to historical text-books and seek to find how, during the process of six eventful centuries, the present condition of things has arisen.

The first thing that impresses everyone who investigates a constitutional problem such as that of the relation between Crown, Lords, and Commons is that in England there is no authoritative written document to which to appeal. If a similar question were to arise in the United States it could be settled simply and immediately by an appeal to the Constitution of 1789, and it could be settled by the Federal Court without ever coming into the arena of party conflict. Similarly in the case of France and Germany, of Belgium and Switzerland, and many other countries, nothing but reference to a document would be necessary, and the reference would be made by a properly constituted and impartial authority. All these constitutions have been manufactured, deliberately framed by art and man's device. They have the virtue of definiteness, combined, of course, with the corresponding defect of lifelessness and rigidity. But the English Constitution has not thus been fabricated all at once; it has grown. It has the irregularity, and even the deformity, of an ancient organism, joined, however, to the gift of life and the power of adapting itself to changing environments.

In England, then, the word "unconstitutional" has a wholly different meaning from that which it bears, say, in America. In the United States it means "illegal" in a specialised sense; in England it means, as a rule, merely "unusual." To say that the Crown would act unconstitutionally if it were to withhold assent to a Bill passed by both Houses of Parliament means no more than that the Crown has not done so for a couple of hundred years. The Crown has just the same power to do so as it had in the days of Queen Anne or King Henry VIII. Whether it has the "right" to do so is a question that does not arise except as a moral question to the individual consciences of the persons concerned: politically and legally it is purely a question of expediency and procedure.

Similarly, when it is said that the Lords cannot reject a Budget, the answer is simple: they have just done it. If it is urged that their action was "unconstitutional," all that that apparently formidable expression means is that their action in rejecting a money Bill is an unusual one; they have not done such a thing for precisely fifty years. If it is asked whether they had a "right" to reject it, the reply is that the matter is one which concerns their consciences alone; it is an ethical question which they apparently answered in the

affirmative. The issue for the Commons and for the electorate is confined to the two questions, the one academic, the other eminently practical, first, was it expedient for the Lords to reject the Budget? secondly, is it desirable to attempt so to reduce the English Constitution, or part of it, to writing as to prevent the Lords from ever rejecting another Budget?

Another General Election may be expected at an early date, and when it comes the dominant issue will be the future relation of Crown, Lords, and Commons.

(1) *The Crown.*—Now if we look at the matter from the historical point of view, we note that the Crown was once the effective governing power in the country. The mediæval king issued ordinances which had the force of laws, levied taxes by his own authority, judged cases in equity, declared war, led armies, concluded treaties, controlled the whole business of the State. These vast mediæval powers, for the most part, remain to the Crown intact. The King can still, in strict constitutional theory, both initiate and (as we inexactly express it) "veto" legislation; he can of his own mere motion disband the army; he can sell the navy; he can cede territory; he can create peers; he can pardon all criminals.

But the King does not attempt to exercise one-tenth of his undiminished prerogatives, because, as a practical and prudent monarch, he realises that to do so would lead to revolution and deposition. Moreover, much of the old machinery has become clogged. Hence many of the royal powers have simply fallen into disuse, while others—such as the prerogative of mercy—have ceased to be royal except in name through being exercised by Ministers responsible, not to the King, but to Parliament. But it must always be remembered that the powers are there. *Nullum tempus occurrit regi.* It is never a question, as has already been remarked, whether the King has a "right" to exercise them or not. It is merely a question whether it would be prudent for him to attempt to do so.

(2) *The Lords.*—The Lords are the ancient councillors of the King. The King alone, as the preamble of all our statutes tells us, "enacts" laws; but he does so only after having listened to the advice, and secured the consent, of the peers. The statute of Quia Emptores (1290) was promulgated on the authority of King and Peers alone; not until 1322 was the necessity of obtaining the further assent of the Commons established. Until the days of the Civil War and the Commonwealth the Lords remained decidedly more important and influential than the Commons. Every great Minister until Sir Robert Walpole's day as naturally went into the House of Lords as he now naturally refrains from going into it, if he can avoid doing so. It was Sir Robert Walpole himself who openly showed that he regarded a peerage as a sort of consolation prize for fallen statesmen, by accepting the title of the Earl of Orford only when he had been driven from power.

But though the Lords have, owing to the growth of democracy, lost their old place as "dominant partner" in the government of the country, it must not be supposed that the great powers which they once exercised have ever been formally taken away from them. It is commonly said that the Lords cannot initiate a money Bill. It is true that they have refrained from doing so since 1407. But they could give a simple answer to any who challenged their ability to do so by doing it. There is nothing to prevent them. Of course, the House of Commons would not assent to any money Bill which came to them from the Lords, and so it would certainly remain inoperative. But that is quite another matter; it is a question, not of right, but of might. The Lords, since they could not carry a money Bill even if they were to introduce it, refrain from "ploughing the sands" of useless endeavour.

The same may be said of the Lords' power to amend money Bills sent to them from the Commons. There is nothing to prevent the Lords from amending a money Bill if they care to do so. The seventeenth-century resolutions of the House of Commons on the question do not bind them in the smallest degree. It is quite certain, however, that neither the Commons nor the electors, in whom the ultimate political sovereignty resides, would tolerate habitual amendment. Since, then, the Lords number six hundred while the electors number six millions, the Lords do not amend money Bills.

With regard to the rejection of a money Bill, the will of the sovereign electorate is not so clear. There is no precedent for the initiation of a money Bill by the Lords for five hundred years; there is no precedent for the amendment of one for two hundred and fifty years; but it was so recently as 1860 that the Lords rejected the Paper Duties Bill. Will the electorate tolerate the use by the Lords of this power, which has lain in abeyance for exactly half a century? It is not at all a question of the Lords' "right" to reject a money Bill; it is purely a question of whether the electorate wishes them to continue in emergencies to do so. The verdict of the recent General Election cannot be said to have given a decisive answer one way or the other. The country has not yet shown clearly that it resents being saved from taxation in exceptional circumstances by the House of Lords. It will, however, much conduce to a speedy and permanent settlement of the question if we can cease to talk irrelevantly respecting the "right" of the Lords to do this or that, and can realise that the only matter that has to be decided is this: Do the six million electors desire the six hundred Lords to retain the power to reject a money Bill, or do they not? The Lords fully realise that they are numerically too few to attempt to do anything which a clear majority of the electors do not want them to do. If the issue came to the *ultima ratio* of battle, they could not hope to gain a victory; hence they will not declare war.

(3) *The House of Commons.*—The House of Commons rose to its present position of consider-

able power from small beginnings in the thirteenth century. It began as a mere "concentration of local machinery." The kings found it more convenient to summon the representatives of shires and towns to meet them at Westminster or some other place than to send round Ministers to treat with each community separately. The prime function of the Commons was to vote the King money; but it was not until the fifteenth century, when their powers had much increased, that they began to claim any exclusive powers in this matter. The vital source of strength which enabled the Commons to enlarge and enforce their claims and privileges lay in the vigorous life of those local communities of shire and town which they represented. With the decay of mediæval communal life in the Tudor period, the power of the Commons declined, until in the time of Wolsey a touch of the heavy hand of Henry VIII. could have crushed Parliamentary government out of existence altogether.

With the Reformation, however, came into operation new democratic principles and a new national organisation, and from the days of Elizabeth the power of the Commons began to revive. The seventeenth century saw the crucial struggle of Parliament as a whole against the King. The Revolution of 1688 marked the termination of that conflict in the conclusive victory of Parliament. The eighteenth century witnessed the contest for dominance between the two Houses. It was a critical moment in this contest when, in 1719, Stanhope introduced a Peerage Bill intended to limit the numbers of the Upper House. Although this appeared to be a mere restriction of the royal prerogative, Walpole perceived that it would do away with the one means by which the opposition of the Lords to the Commons could be overcome, viz., by the creation of a sufficient number of peers to convert a minority into a majority. The acceptance of the Treaty of Utrecht had been secured only a few years before by the special creation of twelve Tory peers (1712). Walpole considered it undesirable that—although the royal prerogative had on this occasion been used against his own party—the same expedient should be rendered unavailable for the future. Hence the Peerage Bill was dropped.

Never since 1712 has it been necessary to employ the royal prerogative in this way. Hence it might well be urged that it would be "unconstitutional" in the sense of "unusual" to employ it after so long a lapse. But no one does, as a matter of fact, urge this plea, simply because the democracy is strong and the Lords are weak. The mere guarantee from William IV., in 1832, that he would, on the advice of his Ministers, employ this power of creating an unlimited number of *ad hoc* peers sufficed to secure the passing of the Reform Bill.

It will probably never be needful to resort to a special creation of peers again. The threats of the creation of hundreds of peers at the present juncture are the emptiest verbiage. It is not when the opposing political parties are so nearly evenly balanced throughout the country as they are at this moment that resort can be had to an emergency exit which is next door to civil war. It is only when the Lords, although unelected, really represent the views of at least half the electorate that they can venture to make a strong stand against a House of Commons which, although elected, is really antagonistic to an immense body of public opinion. If some reform of the House of Lords is desirable in the interests of efficiency, much more urgent is a drastic reform of the House of Commons which shall remove electoral anomalies, equalise constituencies, and, above all, reduce the flagrant over-representation of Ireland.

EXAMINATIONS.

By Prof. G. H. BRYAN, Sc.D., F.R.S.

I.

WHILE numerous societies and journals are devoted to the discussion of methods of *teaching*, there appear to be few, if any, media for discussing the best ways of conducting examinations. Many teachers have denounced the examination system, but destructive criticism frequently breaks down when the question is asked, "What would you have in its place?" In assessing the work done by the pupils of a school or college, an examining board acts as a kind of second chamber. The questions of abolishing this second chamber altogether, abolishing its veto, or reforming it are interesting each in its way, and each may be made the subject of almost unlimited discussion. Meanwhile the second chamber exists and to a large extent lays down the law for teachers, who are put to great inconvenience owing to the want of uniformity which exists in examinations. The number of different examining boards in this country probably runs up towards three figures. Each has drawn up a memorandum of instruction to examiners and corresponding regulations for the candidates; but no attempt has apparently been made to compare the different systems adopted, with the view of removing unnecessary differences and seeing that differences which are retained represent actual requirements due to special conditions.

With the view of setting the ball rolling, I opened a discussion on the subject at a recent meeting of the North Wales Branch of the Mathematical Association. My paper took a long time to read, yet when the discussion started it became evident that I had only touched on a fraction of the subject, and, moreover, that it was high time to start such a discussion. Everything in the present article must be regarded as a mere suggestion, or a purely tentative expression of opinion, subject to modification.

It is evident that we have in general to deal with at least two classes of examinations, each being divided into two sub-classes.

I. Open examinations—that is, examinations of candidates irrespective of their previous teaching.

(*a*) Previous to admission to a course of instruction; *e.g.*, entrance and scholarship examinations.

(*b*) Not followed by a course of study; *e.g.*, examinations for appointments in the public service.

II. Close examinations, of school or college classes.

(*a*) When the examination is confined to a single school or college.

(*b*) Conjoint examinations of several schools or colleges; *e.g.*, "Locals."

The degree examinations of the University of Birmingham fall under Class II. (*a*); those of Wales under Class II. (*b*).

It is not desirable in the present instance to go into much detail regarding the question of whether external examinations of Class II. should be abolished and certificates of proficiency and distinction awarded by teachers instead. In my opinion teachers have already too many duties, for which they are inadequately paid, to make it desirable to place more responsibility on their shoulders than at present. A mathematical master ought, before teaching the subject, to have read the works of at least one of the classical authorities, and he ought also to have acquired an insight into the influence of pure mathematics on the progress of applied science, industry, commerce, and civilisation. Of his pupils, on the other hand, not one in a hundred may want anything beyond a training in calculation, measurement, and accurate reasoning, which he will only have to apply to the problems of everyday life, but which could not be adequately taught by a less trained teacher. A teacher who is to combine these faculties with disciplinary and administrative work has quite enough to do already. There is, on the other hand, the danger of the personal element if the veto is placed entirely in the hands of the teacher; the difficulty of refusing the nice boy, the trouble of parents' appeals on behalf of the pupils. I would rather examine a hundred other people's pupils than ten of my own.

In regard to the personal element, leniency is often a mistaken kindness. To plough a weak candidate may do him all the good in the world if he goes in again and, as sometimes happens, gets a really sound grasp of work he never understood before. Or it may prevent his continuing in a career for which he is unsuited. On the other hand, I suppose that it is the experience of most teachers that they have sometimes to deal with pupils who are hopelessly weak but yet cannot be persuaded to give up the classes or to pull up in their work, and it is much more satisfactory to both teacher and pupil that the final veto should be given by an impartial outside examiner.

For examinations of Class II. I prefer an external examination with the most intimate collaboration between examiner and teacher.

The difficulty of setting papers, which is the main thing an examiner has to worry and rack his brains over, largely disappears when the examiner says to the teacher, "Do your pupils know how to do this or that question?" "Is such and such a question too hard to set them?"

I assume that the object of education is to produce the most efficient citizens, and that the proper measure of its efficiency is afforded by the income which these citizens can earn when their education has been completed, or more accurately by the relation which this income bears to their cost of living.[1] The object which the examiner should keep in view is to supplement the work of the teacher in developing and testing qualities in the examinee which go to make a successful man.

Now, what are the qualities which an examination can test? A list might be made somewhat as follows:

1. The range of knowledge which the candidate has covered.
2. His power of memorising.
3. His diligence and industry.
4. His clear understanding of what he has learnt.
5. His power of expressing his ideas clearly and intelligently, and his neatness of work.
6. His accuracy, notably in points of detail.
7. His powers of applying his knowledge to practical applications.
8. His "common sense."
9. His due sense of proportion in appreciating the relative value and importance of different parts of his work.
10. His reasoning power.
11. His intuition.
12. His ability to see at a glance what a statement means.
13. His competence to deal with unexpected emergencies and to select the best methods for the purpose.
14. His perseverance in completing to the bitter end a task which he has commenced, and not being baffled by difficulties.
15. His versatility and power of changing from one subject to another at short notice.
16. His rapidity of working.
17. His powers of physical endurance and presence of mind.

The list might be extended still further, but I think it is sufficient to show what a large number of conditions an examiner has to take into account if he aims at efficiency. To use an examinership for the purpose of making known "pretty" theorems which the examiner himself has discovered is quite impossible in existing circumstances. If an examiner has to rack his brains for anything, it is not for "pretty" theorems, but for questions that will produce the desired response on the part of the candidates. Such questions are by no means easy to obtain, and any suitable ideas for them must be carefully cherished.

Happily, however, the various qualities mentioned in the above list are not all of equal value, and, moreover, it is not necessary to make provision for all of them in conducting an

[1] It is particularly important to bear this point in view in considering its application to the exceptional genius whether in science, literature, music, or art. The subsequent career of such a genius is usually mainly a perpetual struggle to earn an inadequate income out of uncongenial work. The best education for such an individual is that which best prepares him for the hard experiences which are in store for him when he is cast adrift in the world.

examination. Thus, it is impossible in a three-hour paper to cover the whole syllabus of a set of classes which has taken several weeks to teach. The proper test of No. 1 is not an examination, but the teacher's own statement of the work he has done, coupled with the guarantee afforded by the teacher's own qualifications and distinctions. This applies to examinations of Class II. In examinations for entrance of Class I. (*a*), the candidate's statement in reply to questions is a more direct way of obtaining the information required. In examinations of Class I. (*b*), it is doubtful how far No. 1 is a good qualification. Where the successful candidates are required for the public service, it is probable that the man who has laboriously memorised a large number of pieces of bookwork like the Binomial Theorem will never be so successful as a man possessing qualifications more akin to those required in the work of his office; and this view appears sometimes to be taken into account by those responsible for framing these examinations.

As regards power of memorising (No. 2), every examination tends greatly to exaggerate the importance of this. As the claims of fresh subjects are constantly being pressed forward for recognition in educational curricula, the latter tend to degenerate into cramming, *i.e.*, memorising a large collection of facts that the pupil has not had time to assimilate. Under all existing conditions the object of the examiner should be to reduce memorising to a minimum. This is especially important in a subject like mathematics, because there are many other subjects which depend more on memorising, and some which are practically nothing but memorising. Thus, in languages, grammar is mainly a matter of memorising. Even if mathematical examinations could be so conducted as to eliminate memorising altogether—which is, of course, impossible—it is an open question whether examinations of which mathematics forms a part would not gain in efficiency.

By No. 17 I refer in particular to the strain which is placed upon candidates by the examination ordeal, and under which a nervous candidate may break down. This, again, is a necessary feature of every examination, and one cannot help feeling sorry for candidates who suffer; at the same time it is mistaken kindness to carry one's sympathies too far. Does not the weakness in most, if not all, cases mean that the candidate is lacking in some of those qualities which go to make a successful man, and that he must be prepared for similar disappointments in his future career? On the other hand, the failure may perhaps have the beneficial effect of strengthening his character and thus placing him on the road to future successes. As a general rule the cases of breakdown occur mainly with students who have neglected their work until near the end, who have tried to combine too much amusement and worked late at night, or who have attempted too ambitious a programme of examination work. In each case the candidate learns a valuable moral lesson. Still, there is no danger, in existing circumstances, of decreasing the efficiency of the examination system by reducing the strain so far as possible; on the contrary, any change in this direction is certain to be beneficial.

Omitting, then, Nos. 1, 2, 17, the remaining qualities are mainly such that the efficiency of an examination in testing them depends largely on how that examination is conducted. I propose to deal with the following points, which, however, do not by any means exhaust the subject:

I. The relative advantages of difficult and easy questions.

II. The extent to which aids to memory should be used in the examination room.

III. The length of the papers considered in reference to the duration of the examination, and the alternative plans of—

(*a*) A large number of questions and no limit actually specified on the paper.

(*b*) A large number of questions and candidates limited to a fixed number.

(*c*) Paper not too long to be answered in the time.

IV. The method of assigning marks to the candidates' answers.

V The maintenance of continuity in the examinations from year to year.

I. HARD *v.* EASY QUESTIONS.—What seems easy to an examiner is often hard to the candidate, and I suppose that the tendency is to make papers too hard in the first draft and boil them down afterwards. If you set too hard a paper your candidates will not be able to get a fair proportion of marks unless you give them high marks for scraps of work which are of little or no value. I consider that at the present time the efficiency of the examination system is greatly impaired owing to the extent to which this practice is carried on by examiners, and I can quote the following instances:—In an address to the Mathematical Association, I commented on the prevailing want of common sense in applying formulæ, and instanced the case of a pupil who, being asked to find the area of a right-angled triangle, given a side and an angle, found the remaining sides from the formula $a/\sin A = b/\sin 90°$, and then substituted in the formula $\sqrt{\{s(s-a)(s-b)(s-c)\}}$. A good many people laughed at this example, but since then I have actually had pressure brought to bear on me by other examiners to assign some marks, not for a correct solution of a problem by this formula, not even for an incorrect solution, but for the mere bare statement of the formula in connection with this very kind of question.

The sort of argument one hears is, "That is, of course, wrong; but he puts down so-and-so, which shows that he has some idea of how it ought to be done." "You must give him something for stating the Binomial Theorem" (probably in a question which does not require it). "Yes, he makes a slip here, and this other mistake is unpardonable, but if he had done something

else he could get the answer out that way. You can't be so hard on him as to give him 0." If answers are to be marked in this way, where does the test come in of Nos. 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, and 14?

I now take the case of two candidates, A and B. A tries the whole of a paper and sends up a good many answers that are absolutely wrong; most of his work is written out carelessly and in a slovenly way. He has attempted to gain 100 marks and at the end he actually gains 50. B confines himself to about one-third of the paper. He answers the questions which he tries from beginning to end; his work is neatly and clearly written out, and does not contain a single mistake. He gets 30 marks, which is all he tried for. Both candidates are known to have covered the same ground. A gets distinction on his marks, while B does not. Thus the man who receives the highest credentials is deficient in Nos. 4, 5, 6, 8, 9, 11, 12, 14. The man who fails to obtain them is probably the best man on the list as regards 3, 4, 5, 6, 9, 14, and there is no reason for supposing him to be inferior to A on 7, 8, 10, while he is probably superior on 11, 12, 13. As for 15 and 16, A appears to score, but rapidity of working can only be measured by the number of answers done provided that other qualities, such as style and accuracy, are the same; and it must be remembered that the prevention of mistakes and the completion of answers is a much more laborious task than the writing down of many pages of imperfectly developed ideas and statements reproduced mechanically from memory.

I have almost invariably found that when a hard paper is set, it is the easy questions which are worst answered. In this case the candidates are thrown off their balance, and the whole test becomes an unfair one.

A great mistake, too, is made when the examiner peppers away at the candidates with questions from the borderland of the syllabus. This must lead to cramming.

There is, of course, the objection that if difficult questions are never set the candidates' work will deteriorate, and that it is necessary to keep them strung up by inserting some hard work, not so much with the object of testing the actual candidates as to educate those preparing for future examinations. There is also a possibility of going to the other extreme and setting papers so easy that mere accidental slips in arithmetic and other similar trivial errors have to be penalised unduly. If a paper is set on Calculus, an error in arithmetic ought not to count for much unless the height of a tent is found to be 512 feet or $8\frac{1}{2}$ inches without comment being attached to the result, or the candidate shows want of elementary knowledge by giving the result in the form $7\frac{12345}{67890}$ feet.

To set a paper of exactly the right standard is more difficult than to give a photograph the right exposure. In both cases an error either one way or the other is detrimental, and the difficulty is further enhanced when it is remembered that good ideas for questions are hard to find, and, moreover, that examinees are themselves very variable, so that what is easy one year may be difficult the next. The usual tendency is to make papers too hard.

SCHOOL PRIZES.

By Amy Barter.

THE morality of our system of prize-giving has, of late years, been almost as much discussed as our system of corporal punishment. Yet, in spite of all the attention which has been directed to the theory, our practice does not seem to have made any appreciable advance towards perfection since the days of our forefathers, when the child was not the important person he has since become, and few people felt interested in the question as to whether a prize did, or did not, act upon him with the corrupting influence of a bribe. The uncertainty of mind and difference of opinion prevailing on this subject is probably one reason for the lack of improvement. The results of our present system vary greatly according to circumstances, but, on the whole, it may be said fairly that we do not get the best return possible for this part of our national expenditure. Until we have made up our minds whether prizes should be given at all, and, if given, what principles should govern their allotment, it is, perhaps, unreasonable to expect that much trouble should be expended in considering the details of a doubtful scheme. Yet be the theory what it may, the practice is a general one, and appears likely to survive all attacks made upon it. Therefore it would seem that some efforts towards improvement on various practical points would not be altogether thrown away.

It is proposed here to discuss one part of the subject only—the choice of prize books. The conviction that something is wrong with the method at present employed has lately been brought home to the writer by means of two incidents. The first occurred in connection with a prize distribution at a large London secondary school for boys. The distinguished person who presided at the function told his audience that when he was a boy he received as a prize the works of a poet of whom, in after years, he became an enthusiastic admirer. His introduction to the poems was not, however, made through his prize, which he never thought of reading at any period of his life, not even when his appreciation of its contents had become keen. It may be said that this is an indictment not of the present, but of a past generation of prize-givers; yet the boys addressed seemed to sympathise fully with the point of view, and many were ready with similar accounts of their own experiences. That this attitude is not entirely without justification the second incident referred

to goes to prove. An intelligent, book-loving girl of fifteen received as a prize from a girls' club a book which conceivably might have provided mental nourishment for a child of seven, but which was absolutely incapable of interesting, amusing, or otherwise benefiting the actual recipient. There is, it would seem, some ground for fearing that the lack of judgment shown in choosing prize books has given rise to a danger of their being regarded as *prizes* merely, not as *books* at all.

There are many reasons for this weakness in our present system besides that already adduced. Convention and precedent have much to answer for; the curious tradition, that any mass of printed matter enclosed within covers is—at least for the purposes of children and the "lower classes"—a book, still survives. Another reason is the ineffective character of the literature teaching which has, until the last few years, been given in our schools. The literary taste of the children has not been cultivated, and since it has seemed impossible to provide them with real literary food which they could appreciate, purveyors have had recourse to books which require no effort for their assimilation, or to those erudite works which to the uninitiated appear like stones, and of which, consequently, no attempt at assimilation is made. But probably the chief reason for the ineffectiveness of the whole system is indifference—nobody has bothered much about the matter.

So soon as one begins to "bother," however, it becomes evident that there are three principles, on any one of which the selection of rewards may be based—glory, profit, pleasure; or a judicious combination of the three may be attempted. If the "glory alone" principle is adopted, substantial rewards, such as books, are necessarily excluded; the two latter principles, then, alone concern the present question.

Some prize-givers, like Miss Lydia Donnithorne in "Adam Bede," stand firmly by the "profit alone" system. They would include in their list "nothing but what is useful and substantial," and would see no incongruity in presenting, as Miss Lydia did, "a roll of flannel and a grogram gown" to a girl fond of finery, as a prize for winning a race on a hot summer day. This roll of flannel and grogram (mysterious word to twentieth-century ears) gown has often seemed to me typical of the ordinary prize book. It was unsuited to the recipient, the time, and the victory to be commemorated; it was unbeautiful and uninspiring; it had possibilities of usefulness, but the recipient was too much repelled by its uninviting exterior to turn these to advantage. Such prizes evoke little gratitude. There are few children running barefoot about the streets whose eyes would not sparkle more brightly at the gift of a box of chocolates than at that of a pair of boots. Boots belong to the necessities of life, which it is clearly the business of Providence to supply. If Providence fails in its duty the person who supplies its deficiencies may be regarded with gratitude, but not with enthusiasm. Chocolates, on the other hand, are to be classed as superfluities. The normal child understands that his contract with Providence makes no mention of them. Their bestowal is therefore an act of grace. This attitude of mind is common to children of all classes, though the terms "necessity" and "superfluity" have naturally a widely varying connotation. Even Macaulay, whom it is perhaps fair to consider as in many respects typical of his own omniscient schoolboy, was normal in this matter. "A prize book," he says, "ought to be a book which a boy receives with pleasure, and reads over and over, not as a task, but spontaneously. I have not forgotten my own schoolboy feelings on this subject. . . . I was never better pleased than when at fourteen I was master of Boswell's 'Life of Johnson,' which I had long been wishing to read. If my master had given me, instead of Boswell, a Critical Pronouncing Dictionary or a Geographical Class Book, I should have been much less gratified by my success."

Should the idea of giving pleasure be, then, our guiding principle in the selection of prizes. I would answer unhesitatingly, "Yes." This avowal of opinion may seem shocking to stern moralists, but it can, I think, be justified. It is possible to combine pleasure with profit, and even to enhance the former by a judicious admixture of the latter. But even if this were not so, surely the giving of pleasure—keen, genuine pleasure—is a deed which may well be accounted righteous. This is not meant to advocate a foolishly indulgent spirit, which weakly panders to the juvenile delight in purely material pleasures typified by the love of chocolate. Hood's Mrs. S——, of Clapham Academy, in whose parlour were rewarded "The little Crichtons of the hour, Her muffin-medals that devour And swill her prize—bohea," is no more held up as an ideal prize-giver than is Miss Lydia Donnithorne. The matter is not so easy as that. To produce the maximum amount of joy from a given sum of money and a particular set of circumstances is a task which is not unworthy the best energies of the most highly gifted among us.

This leads to the practical consideration—What are the essential qualities of an ideal prize book? Miss Lydia's roll of flannel and grogram gown may help us to decide by providing an example on the opposite side. First, it should be suited to the taste of the receiver—judiciously suited. One would not wish that Miss Lydia had given Bess Cranage any of the tawdry finery in which her soul delighted. But some pretty and tasteful article of dress might have appealed to poor Bess's ruling passion, which after all was only a diseased love of beauty, and been instrumental in bringing it to a state of health. Her whole nature might have been changed by the attempt to live up to a dainty gown or a simple, becoming hat. So with prize books. A boy who adores "penny dreadfuls" may be given such a work as "Treasure Island," and while his blood is stirred and his flesh made to creep in the old delightful

fashion, his literary taste will receive unconscious training. A girl who, like Miss Burney's Evelina, is "full of sentiment" and favours stories possessing what the advertisements call "a strong love interest," may be led to better things by way of such a book as Mary Linskill's "Between the Heather and the Northern Sea," where abundant sentiment is tempered by some admixture of strength. It is necessary to be gentle with the weaker brethren, and lead them slowly to the great literary heights.

Suitability to the stage of the pupil's development should also be considered. Because a boy is known to be fond of poetry, it does not follow that he should be given "The Ring and the Book" or "Paradise Lost," though both these works will delight him in the time to come. It is true that every book bestowed as a prize should be one which will be of value to the scholar to the end of his life, so that his prizes may form the nucleus of that library which it is every man's duty to collect. But there are many books—in the Ruskinian sense of the word—which are equally delightful to the child and to the man. The opposite error of giving books which are *below* the intellectual capacity of the receiver is still more strongly to be condemned. It involves an injury to his self-respect, as well as to his literary taste.

A third kind of suitability is concerned with the victory to be commemorated. One would not press this too far, and insist, for instance, that a prize for proficiency in arithmetic should always consist of what Mrs. Malaprop calls "mathematical or diabolical instruments." But the principle is undoubtedly a sound one, and only needs to be carefully considered and wisely applied to be found universally helpful.

In order that this suitability of the prize to the recipient may be attained, there are three things —common practices all of them in connection with prize-giving—which should *not* be done. First, the books should not be bought in a lot, without any reference to individuals, and portioned out on some arbitrary plan afterwards. The chances are greatly against the right book reaching the right person. Secondly, the children should not be asked to choose their prizes from a list, five or ten minutes being allowed, the teacher waiting, pen in hand, for the choice to be announced. Thirdly, the choice should not be restricted to the works published by a certain firm or society. The writer speaks feelingly on this subject, since she has on her shelves at the present moment five expensive and well-bound books bestowed in the circumstances indicated. She never looks at them without thinking of coveted literary favourites which might have occupied their places had a more liberal system of selection been in operation.

The prize book should be beautiful to the eye and to the touch, as well as to the understanding. Happily, in these days, this requirement is usually fulfilled. The crudely coloured cloth cover, with aggressive lettering, which used to be typical of "books for prizes," has almost disappeared. Children should early be initiated into the delights of the "bookish man," as distinguished from the mere reader—he who can rejoice in the beautiful and fitting binding of a great work as he rejoices in a fair face; who delights in turning over pages the surface of which is pleasant to his touch, and in seeing noble thoughts set out in worthy type. In these days such joys can be obtained without extravagant expenditure.

Finally, the prize-giver must beware of being guided too exclusively by his own predilections or prejudices. Most of us have a hobby, and some of us ride it very hard; but it is obviously unreasonable to expect that the offer of a seat behind us will always be received with enthusiasm. We cannot avoid putting something of our own individuality into the prizes we choose, though we probably do it unconsciously. Miss Lydia, doubtless, did not realise that it was because she was a thoroughly uninteresting and uninspiring person that her gifts exhibited these characteristics. We cannot help it if we also are uninteresting and uninspiring, but we can, here as always, attempt to overcome natural defects by careful discipline and training, and in this instance the road lies through the cultivation of a sympathetic interest in other people.

HALLEY'S COMET.[1]

THE comet which is now claiming our attention will probably not be a really magnificent object. It is not easy to forecast with accuracy, but the indications are in favour of a moderately bright appearance only, in the latter part of May, in the west after sunset. Halley's comet appeals to us on historical and sentimental grounds rather than because of its grandeur. In predicting its return in 1758 or thereabouts, Halley gave a sensational illustration of the consequences following from the newly-discovered law of gravitation, which he had elicited from Newton. As the time drew near for the prophesied return there was intense excitement, and the fulfilment of the prediction was hailed as a great triumph. Moreover, it was suggested that the history of the comet might be carried backwards, and this has been done successfully as far as 240 B.C.

We cannot estimate adequately the magnitude of these achievements without recurring to the circumstances in which they were made. Comets were in old days not merely mysterious but terrifying. Not only were their movements apparently arbitrary and incapable of prediction, but they were believed to bring disaster. In the words of Du Bartas, as rendered by Sylvester (1621):

[1] From a lecture delivered at the Royal Institution on Friday, February 18th, 1910, by Prof. H. H. Turner, D.Sc., D.C.L., F.R.S., Savilian Professor of Astronomy in the University of Oxford.

There with long bloudy haire, a Blazing Star
Threatens the World with Famin, Plague and War.
To Princes, death; to Kingdoms, many crosses;
To all Estates, ineuitable Losses:
To Heardmen, Rot: to Plough-men, hap-lesse seasons:
To Saylers, Storms: to Cities, ciuill Treasons.

The particular comet of 1618 may have been in the mind of the writer, as it was probably in that of Milton when he wrote in "Paradise Lost":

. . . on th' other side
Incenst with indignation Satan stood,
Unterrifi'd: and like a comet burn'd,
That fires the length of Ophiuchus huge
In th' Arctic sky, and from his horrid hair
Shakes pestilence and war.

Milton's poem was finished in 1665, and there were two fine comets in 1664 and 1665, which were held responsible for the Plague and Fire of London. But Milton was then blind, and it is more probable that he was thinking of the great comet he had seen as a boy of ten.

Soon after Milton wrote these words, Newton began thinking of the law of gravitation, and realised, from the form of Kepler's third law, that there might exist a force, varying inversely as the square of the distance, which would approximately explain the movements of the planets round the sun and of the moon round the earth; possibly also the rate at which bodies fell towards the earth. But nothing practical came of his speculations, for several reasons: he was shy and reserved as to his discoveries, and he realised a grave difficulty which no one else seems to have suspected—viz., that though the huge sun and planets might be considered to attract one another as mere particles when separated by the planetary distances, the same ideas were not applicable to bodies attracted close to the earth's surface. His reserve was overcome by Halley, who visited Cambridge in August, 1684, with the express purpose of finding out how far Newton had got in applying the idea of gravity. Halley was overjoyed to find that Newton had already proved the proposition that bodies attracted gravitationally would describe ellipses; he insisted on this "and much more" being published, and paid for the publication himself, and his generous insistence was the means of Newton discovering the wonderful proposition that spheres attract as particles at all (external) distances however small: the theory of gravity was complete!

On being appointed Savilian Professor of Geometry at Oxford in 1704, Halley set to work to calculate the orbits of as many comets as he could find records of, according to the principles and methods furnished by Newton, and after "incredible labour" published the elements of twenty-four comets. In three cases, the elements bore a close resemblance to one another, as shown in this table:

Date of Comet	Interval		Longitude of Node	Longitude of Perihelion	Inclination	Distance
	Y.	M.				
1531, Aug. 24	76	2	49	301	18	0·57
1607, Oct. 16	74	11	50	302	17	0·59
1682, Sept. 4			51	302	18	0·58

It will be seen that the last four columns have nearly the same figures, and the quadruple coincidence suggested to Halley that the same comet had appeared three times, travelling in an elliptic orbit. One circumstance, however, was puzzling: the interval between the first two appearances was 76 years 2 months, between the second and third 74 years 11 months. But Halley was ready with an explanation which we now know to be correct. He had noticed that the planets Jupiter and Saturn disturbed each other (as they should according to the great law of gravitation). He argued that they might also disturb a comet, and the effect would be much greater: for a not very large disturbance was capable of sending a comet away for ever—outside the sun's sphere of influence: hence a smaller disturbance could lengthen its journey appreciably.

In fact he saw no difficulty which could not be explained away in concluding that the three sets of elements in Table I. referred really to the same comet; and he predicted that it would again return in another seventy-five or seventy-six years, say in 1758 or thereabouts. This return he could not himself hope to witness (he died in 1742 at the ripe age of eighty-five), but he trusted posterity, when the comet did reappear, to credit an Englishman with the prediction. "Quocirca si secundum predicta nostra redierit iterum circa annum 1758, hoc primum ab homine Anglo inventum fuisse non inficiabitur aequa posteritas."[1]

Before the reappearance of the comet was due there was ample time to make calculations of the effects which Jupiter and Saturn would actually produce, though the planets Uranus and Neptune, which also contributed something to the perturbation, were as yet undiscovered. These calculations foreshadowed a greater delay than had been anticipated, and the comet did not return to perihelion until 1759. But the delay, the causes of which Halley had so expressly recognised, really added fresh laurels to his success in prediction. The comet went round once again, and reappeared in 1835; once again, and has come back to us once more. It has been photographed and seen in telescopes of moderate power. In May, we hope it will be easily seen with the naked eye. Until recently the calculations of the circumstances of return had been chiefly made by foreign astronomers, but for the present return, Messrs. Cowell and Crommelin, of the Royal Observatory at Greenwich, have outdistanced all competitors and been awarded the prize of the Astronomische Gesellschaft for their most successful prediction. They used special methods for the work, such as had been devised shortly before by Mr. Cowell for dealing with the exceptional case of the tiny eighth satellite of Jupiter. To understand the difficulties and the method of meeting them, let us recur for a moment to the statement of the law of gravitation, and consider what it means in detail. Suppose we are at a distance of 16 feet from an attracting centre, and find the

[1] These words are not in the original paper, but were added in a later edition, which, however, was not published until after Halley's death, in 1749.

pull is 1 lb. If we halve the distance, *i.e.*, go 8 feet nearer, then the pull is 4 lb.; if we go 4 feet nearer (halving the distance again), the pull is 16 lb.; 2 feet nearer and it is 64 lb.; 1 foot nearer and it is 256 lb. Notice particularly that as we approach the centre the force is not only itself greater, but *increases* more rapidly. At 16 feet distance, an error of 1 foot would not much matter: at 2 feet distance it makes the enormous difference between 64 and 256 lb. pull.

It may not be quite clear wherein lies the chief difficulty of the work, or the chief merit of the accuracy attained. Is not the orbit of the comet well known after so many revolutions have been observed? Let us suppose for a moment that this were so; that there were rails laid on the track round the sun on which the comet must travel like a train, without deviating so much as a hair's breadth. There would still remain one element of uncertainty, viz., the time at which it would arrive. The disturbances of the planets would now be limited to delays and accelerations, such as attend the passage of a train through wayside stations. We must add together all the delays and subtract any time saved. What accuracy may we expect in the final result? Remember that the whole journey takes seventy-five years, and that there may be unknown disturbing causes. We shall be fortunate if the time is predicted within a week; the prediction of a famous French astronomer differed by a whole month from that of Messrs. Cowell and Crommelin, and that of another unknown calculator by two months. It was therefore gratifying to them to be correct within three days.

One peculiarity of the present return, to which Mr. Crommelin has directed attention, is that the interval since the last appearance is the shortest on record by some five and a half months. It is also noteworthy that this quick return is the paradoxical result of special *delays* by Jupiter. The orbits of the comet and of Jupiter cross (approximately) at two points, and the time occupied by the planet in journeying from one to the other in its orbit is nearly equal to that occupied by the comet in *its* orbit; hence if both are near one crossing point together, they will also be near the other point together. Jupiter got behind the comet on both these occasions during the last round and pulled it back, the direct effect of which is, of course, delay; but an indirect effect overpowers this; the comet does not go so far afield when checked at the outset, and so comes home quicker. When the juggler throws up his potatoes very vigorously they take a long time to come down on to his forehead: but if something were to check his throw, the interval would be smaller.

As regards the limit to which the comet attains, it journeys beyond the orbit of Neptune, some thirty times the distance of earth from sun, say 3,000 million miles. It does not go far beyond this orbit, but by the peculiarities of elliptic motion under gravity it spends half its time doing the small arc which lies beyond Neptune's orbit. Attention was called earlier in the lecture to the rapidity with which gravity increases near the attracting centre; as a consequence the comet's movements are greatly accelerated, and it describes in a few weeks, when near the sun, an arc equal to that over which it spends as many years at the other extreme of its orbit.

Messrs. Cowell and Crommelin have not limited their work to the present return of the comet, but have carried its history back through the ages to 240 B.C. Nearly a century after Halley's death a fine piece of work in continuation of his great discovery was accomplished by Mr. J. R. Hind, who, by examining old records and especially the Chinese Annals, was able to indicate with fair probability the following previous appearances of Halley's comet:

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

A.D. (1682)	1223	760	295
(1607)	1145	684	218
(1531)	*1066*	608	141
1456	989	530	66 A.D.
1378	912	451	12 B.C.
1301	837	373	

But a more complete discussion was needed; several of the identifications were uncertain, and one or two of them turn out to be wrong. Messrs. Cowell and Crommelin, with the assistance of three volunteers, Dr. Smart, Mr. F. R. Cripps, and Mr. Thomas Wright, have proceeded backwards step by step, making each return sure before proceeding to the next. B.C. 87 and (probably) B.C. 240 have been added to the list of returns. Hind was wrong in 608 (a year and a half too late) and in 912 (four months too early) and in 1223 (ten months too late). The comet of 1222 was a bright one, seen both in Europe and China, but its identity with Halley's was not suspected until this careful investigation was made. The date 1066 will be noticed as that of the Norman Conquest of England. Taking the cue from Halley's pride in an English achievement, we may note that 1531 was the year in which King Henry VIII. was declared Head of the English Church; that 1607 saw the foundation of Jamestown, with which the history of our lost colony, the United States, may be said to commence; that 1758 saw the birth of Nelson, and 1759 the Battle of Quiberon Bay. Mr. Crommelin has called attention to the curious parallel between the general elections in England in 1835 and 1910. The numbers of the parties at the previous elections and after the election in the comet year are curiously parallel:

	1835	1910
Liberals in previous	514 ...	513
Liberals after election	385 ...	397
Opposition in previous	144 ...	157
Opposition after election	273 ...	273

The comet of 66 was perhaps the sword mentioned by Josephus as hanging over Jerusalem for a whole year together, which he took to be a warning of its impending destruction.

The return of 1456 originated a false story (which grew with age, and will be hard to

eradicate from the various literary channels into which it has found its way) that Pope Calixtus III. had cursed the comet. The true facts have been clearly stated several times, and it has been shown that the legend has no foundation. A very complete discussion of the matter by Father Stein, of the Vatican Observatory, has just been published as No. II. (1909) of the publications of the Specola Vaticana.

As regards the present return, special efforts were made to detect the comet as early as possible. Many photographic plates were exposed in powerful telescopes during the winter 1908–9, but without success. The first to announce an image of the comet was Dr. Max Wolf, of Heidelberg, who found it on one of his plates taken on September 11th, 1909, close to the place predicted by Messrs. Cowell and Crommelin. This practical proof of the correctness of their work led almost immediately to the award to them of the prize offered by the Astronomische Gesellschaft.

Guided by the information afforded by the Heidelberg photograph, a new search was made on plates previously taken at the Royal Observatory, Greenwich, and the tiny faint image of the comet was then found on plates taken on September 9th. Dr. Wolf found images on his plates of August 28th, and ultimately the comet's image was detected on a plate taken at Helwan in Egypt on August 24th, with the Reynolds reflector.

What of future returns? Can we expect reappearances of the comet to continue indefinitely? Our knowledge of the nature and history of comets, though it has advanced rapidly in the last few decades, is still scarcely sufficient to enable us to answer with confidence; but the indications are that comets are continuously being disintegrated and are ultimately broken up, perhaps into a swarm of meteors. The tail of a comet probably represents its losses at the moment. The tail or train does not, as might be supposed, follow behind the head in the same path, as the smoke follows an engine: it is as often in front of the head as behind it. The tail always, in fact, points away from the sun, as though a strong current of air were blowing in all directions outwards from the sun, determining the direction of the tail as the wind determines that of a streamer. And there is actually this in common between the cause of the tail and a current of air —that both have a tendency to drive away lighter particles from heavier. We blow away chaff from grain: and the fierce *light-pressure of the sun* (to which many astronomers now attribute the formation of cometary tails) in the same way separates the lighter constituents of the comet and drives them outward into space. Possibly we are wrong in assigning such large powers to light-pressure—the older view that the repulsive action is electrical may turn out to be more correct—but that will not alter the nature of the separating action, which depends on the fact that the repulsion varies as the surface of a particle, and therefore as the square only of its linear dimensions, while its mass varies as the cube. By reducing the dimensions we thus give the repulsion greater relative importance; halve the size of a particle and it is twice as easy to blow away; halve it again, and the facility is again doubled, and so on; and this is true whether we are concerned with light-pressure or electrical action, or the blowing of dust.

Comets thus tend to grow smaller. The losses represented by the tail are difficult to estimate quantitatively; but from recent photographs, especially those of Prof. E. E. Barnard, and those taken at the Royal Observatory, Greenwich, it has been conclusively proved that matter is travelling outwards from the head of the comet, and some progress has been made with quantitative estimations.

The hypothesis is not by any means new. "On this hypothesis," said Dr. Huggins in 1882, "a comet would, of course, suffer a large waste of material at each return to perihelion, as the nucleus would be unable to gather up again to itself the scattered matter of the tail; and this view is in accordance with the fact that no comet of short period has a tail of any considerable magnitude." But in recent years the evidence for the hypothesis has been much strengthened by the photographs above-mentioned.

The occasion for Dr. Huggins's lecture was the acquisition of new spectroscopic evidence about the chemical composition of comets. It had been found that the spectrum was continuous, and contained Fraunhofer lines, so that the light was reflected solar light in part; but that it was crossed by some *bright* lines, indicating the presence of carbon, hydrogen and nitrogen, and probably oxygen. In most comets observed since then the bands of carbon have extended into the tail of the comet; but in 1907 Deslandres announced some new bands in the tail, and these new bands were a prominent feature also in the tail of Morehouse's comet (c. 1908). Prof. Fowler, of the Imperial College of Science and Technology, has had the good fortune to identify the new spectrum with one observed in his laboratory, but though he can reproduce the laboratory spectrum at will, he is not yet fully clear as to its origin. His conclusion at present is "that the spectra of the tails of Daniel's and Morehouse's comets were chiefly derived from some compound of carbon, under conditions which have only been reproduced in the terrestrial gases when at pressures of about one-hundredth of a millimetre or less." The lowness of the pressure is in accord with what has been hitherto inferred as to the physical conditions of the tail; and may help to allay the anxieties of those who dread our passage through the tail of Halley's comet on May 18th. Will the spectrum of the moon on that night, viewed through a quarter of a million miles of the comet's tail, show Prof. Fowler's new spectrum?

So far as we know, then, Halley's comet is being gradually disintegrated. At each return the sun exacts a considerable fine, and since we know of no compensating replenishment of the patrimony, it must be dwindling, and will ultimately dis-

appear. Other evidence tells us that there is a close connection between comets and meteors, and hence, in ages to come, the flashing of a few meteors across the sky may be all that remains to tell us of the comet which was a terror to past ages. But that end is not yet. We may confidently expect many more returns of his comet to bear witness to Halley's fame; and when we see the comet in May, let us remember Halley—Halley the astronomer, who first remarked that the stars moved; Halley the navigator, who hoped to render navigation less difficult for others; Halley, the friend and stimulator of Newton, whose labours, undertaken merely to elucidate his friend's great law of gravitation, brought unexpected fame for himself; Halley, in fine, as he would himself have us remember him, Halley "the Englishman."

SIDELIGHTS ON HISTORY.

With Compliments to the Compilers of a Recent Exercise Book.

By Vir Obscurus.

IN the course of a visit to the Levant I was so fortunate as to acquire a number of clay tablets inscribed in an unknown tongue. The script defied the efforts of the most competent scholars; but when in despair I tackled it myself, I deciphered it quite easily from my long familiarity with the difficulties of my own handwriting. In this paper I give my discoveries to the world.

Unfortunately the tablets are not complete; but from the fragments a great deal may be learnt of the changes and chances of mortal life three millenniums ago.

The scene of the events I am now to describe was an island, not named in my records, but undoubtedly Crete, and Crete undoubtedly under Minos. There are constant references to the sea, which I can testify from autopsy completely surrounds the island of Crete; and other natural features are accurately described.

The first tablet contains a description of the writer's home in the happy island, which I have identified with Crete. He cannot contain his delight as he cries out:

In the sea! In the seas! There are beautiful fish in the seas of Greece; the rivers of the land are not broad; there are fish in the broad rivers. There are broad rivers and beautiful trees in the island; there are many rivers and large trees in the island. There are graceful women in the island: the graceful women did not trust the orator's words, the graceful woman[1] loved her children. There are many kinds of lions in the island: the teeth of the lion were sharp. In summer the boys and young men pursue lions. Pursue lions in summer! it is useful to pursue lions in summer. It is difficult to persuade lions: in summer, lions are not friendly to men.

This idyllic picture is interrupted by internecine feud and foreign wars. The graceful women, it would seem, not content with loving their children, aspired to a share in the management of the State. What happened exactly does not appear; but our author is now heard apostrophising the new claimants for power.

Let women manage the affairs of the house; many women manage the affairs of their houses well.[1] Let men manage the affairs of the State.[2] Do not write letters by night; let the letter be written by night. It is always difficult to write letters by night. Do not persuade boys to fight; the men showed courage in the battle. Men are braver than women.

The women's answer is unfortunately left in a very broken state; only a few sentences are intelligible.

Oh that the orator would cease from his speech! The women will not be deceived by the words of the orator. Oh that we may not be stopped by the judge! The women will fight for their country; the women will show courage in the battle; those who brandish their arms are not always brave. Women do not always trust their husbands. Much courage was shown by all the women. It will be safer for the women to fly out of the city. Men are not always wiser than women.

This forecast seems to have been fulfilled. After a secession, like that of the Roman plebs, the women got the best of it, but only with the help of the despised sex.

Those who had revolted were drawn up in the road; the army was defeated by those who had revolted. All men honoured the courage of this woman. The women were saved by the brave slaves.

This disturbance appears to have spread consternation throughout the city; even Demosthenes, the chief orator of Minoan Crete, did not know what to do.

Being perplexed, they fled to Demosthenes; Demosthenes, the greatest orator, was often perplexed; being perplexed, he told lies and would not obey. The women will not be deceived by the words of the orator. Those who were saved were perplexed and asked for arms. The citizens, being perplexed, would not guard the walls.[3] We had not a leader, and all the soldiers were perplexed. Being perplexed, they fled out of the city to us. It will be safest to leave all the women in the city;[4] do not leave your wife behind in the house. Being perplexed, we left all the women in the ships.[5] Do not write letters to the rich; do not carry on the war in winter, citizens;[6] it will be most difficult to carry on the war in the spring.

The perplexity of all parties was increased by a messenger from the King of the Persians, demanding earth and water. The inhabitants poohpoohed the danger, and their chief orator told them, "The Persians will not attack you, citizens." But the ambassador told them plainly, "In six months the Persians will enslave the free city," and departed, bearing the Cretans' answer. The following lines refer somewhat vaguely to this crisis.

"Let us write a letter to the King of the Persians." We sent a slave to the Persians' camp. The King of the Persians has not prospered in the war;[7] those who obey

[1] Only one?

[1] A cautious statement, probably true. [2] I wish they would.
[3] Very properly.
[4] Obscure: the women were already outside. [5] Shame.
[6] This appeal had no effect: we read elsewhere, "We shall carry on the war in winter," which was contrary to Greek custom.
[7] This is clearly a wrong impression, for we learn: "The King of the Persians enslaved many cities.

the King of the Persians will not be useful citizens. Let them believe the words of Demosthenes! Let us not obey the King of the Persians! May they not honour the King of the Persians! The Greeks were more free than the Persians; may you conquer the Persians, general! Let us not be conquered by the Persians!

Later, misgivings began to attack the people. "It will be most difficult," we read, "to conquer the Persians; do not pursue the Persians to the ships.[1] It will not be difficult to defeat the cavalry; may they not carry on the war for many years! In three months we shall carry on the war with much courage." But they were not to be allowed three months; and Socrates, a statesman, as we are told, "wiser than Demosthenes," solemnly warned them that they would be enslaved in three days. Here we have one of those undesigned coincidences which go so far to prove the genuineness of our documents. We all remember the statue of Nemesis at Rhamnus: here also the Persians had no sooner set foot in Crete than they erected a trophy. But let the tablets speak. The first sentence seems to indicate collusion with Demosthenes.

"Let us set up a trophy in the island, Demosthenes!" Having come into the island, they set up a trophy. The general set up a trophy in the temple of the goddess.[2] Trophies are not set up by the conquered.[3]

The course of the ensuing battle is next described.

The mountains were not far distant from the river;[4] the river was not far from the enemy's camp. We had most beautiful horses and very many houses.[5] They equipped very many ships when fighting against the Persians. The ships were equipped in twelve days. The slaves reported everything to the King. We shall equip the ships in the spring.[6] The wisest men advised the Athenians to leave their city and flee to their ships.[7] We had very brave soldiers and very many darts. We threw many darts into the ranks of the enemy; all those who threw darts harmed the enemy.[8] Those who threw the darts fled out of the city. Defeated by the cavalry,[9] we fled to the mountains. You fled out of the house to the harbour; we fled by night out of the harbour into the town. You did not flee to the walls, soldiers; having been defeated, we fled to the camp. All those who were defeated fled to the camp. The soldiers, having left their ranks, asked for arms: those who were saved were perplexed, and asked for arms. Those who had been defeated fled to us by night: we love those who trust us.[10]

In this trouble only two men kept their heads: the judge, obviously Minos himself, and a brave sailor, of whom we read:

We shall stop the battles! We stop the battle in the country. Wisdom stops battles. He will stop the battle! You are stopping the battle. The courage of the citizen[11] will stop the battle; the words of the general stopped the battle. You will not stop the war, O poet![1] You stopped the war, O wise judge! The brave sailor stopped the battle.

How they did it we would fain know; but time has cast a veil over it. We can only see dimly through the mists of three thousand years, everybody in the island in chains, soldiers, citizens, judges, muses, goddesses; and yet everybody setting everybody else free. This early example of log-rolling is to be noted.

I loosen the fetters; he loosens his fetters,[2] you loosen the fetters, they loosen fetters; they will loosen the fetters in the house. He loosens the fetters of the goddess; the goddess will loosen the fetters, the goddesses will loosen the fetters, the muse will loosen the fetters, the steward was loosening the fetters: I shall loosen the steward of the land. The judges were loosening the fetters; the judge was loosening the steward: courage loosens the tongue.[3] They free the muses! they free the goddesses of the country! You free the goddesses! They will not free the army.

Will it be believed that the people turned on their noble preservers?

The citizens are pursuing the judge into the house: I pursued the judge to the gates of the house. The judge was pursuing the steward out of the house: they pursue the judge out of the land. He pursued the soldier to the gate. The citizens pursued the young man to the gates; we shall pursue the young man out of the land. The citizens pursue honour and virtue.[4] The army pursues the judges out of the land. The sailors were pursuing the stewards. The judges were pursuing the young man to the house: the soldiers pursued the sailor into the house: the sailors pursued the soldiers to the gates of the house.

It must have been quite a panic; everybody was at the same time pursuer and pursued, and we can no longer be surprised that Cnossos was burnt to the ground. We should have known nothing of the course of this cataclysm but that the survivors had a severe attack of *cacoethes scribendi*; and no wonder, after what they had gone through, poor things. This is made clear by my last tablet.

Let us write a history of our country. They wrote a history of the great war. Having defeated the Persians,[5] he wrote a history of the war. My brother wrote a history of the great war. My wife wrote a letter to her mother.[6] He wrote a history of our country.

Thus we have evidence for five histories at least, not including "my wife's" letter, which doubtless contained a chatty account of the events. Women at that time had not the advantages of higher education; hence the poor wife could hardly be expected to do more.

I need add no comments on this sad tale; the most casual reader will see how invaluable is the spade in throwing light on the cruces of history, and in setting before our mind's eye those nations of the past which were nipped in the bud by the witches' brew of international turmoil.

1 The reason for this caution is not clear.
2 Another? To set up a trophy in a temple was also contrary to later Greek custom. The allusion to the goddess is another indication of Crete.
3 A needless remark, perhaps meant to be insulting.
4 True.
5 It is not clear how these were used in the battle.
6 There's many a slip.
7 What are the Athenians doing in these galleys? Perhaps the seven men and maids of the Tribute.
8 Good practice this.
9 Their anticipations were thus falsified.
10 A noble sentiment.
11 Hon. Sec. of the Humanitarian Society.

1 William Watson was his name.
2 Selfish man.
3 He said, "I thank you."
4 *I.e.*, all decent Conservatives.
5 This mistake shows the madness which fell on the survivors.
6 Who, alas, had perished.

GAS v. ELECTRICITY FOR THE LIGHTING OF SCHOOLS.

By Sydney F. Walker, R.N.
Consulting Engineer.

WHEN the Electrical Exhibition of 1882 was held, there was a very strong feeling indeed throughout all classes of the community against gas. At that time gas was dear, and a great deal of it was very bad. It was hoped then that electricity was to be the saviour of society, so far as illumination was concerned. As is known, the electric light did not become thoroughly practical for a good many years after that exhibition, and meanwhile gas engineers took the alarm and proceeded to put their houses in order thoroughly. The result has been that while electricity has been making steady progress during the last fifteen to twenty years, and has become more and more the light for everyone, gas has been making even better progress. For a good many years now, gas, in the great majority of towns at least, has been very good indeed, and the price has been steadily decreasing. In addition to this, gas engineers have introduced the high-pressure system, which enables them to obtain a much higher efficiency of combustion of the gas and a much higher degree of illumination than was possible with gas in the old days.

It need hardly be mentioned that the invention of the Welsbach mantle has been the cause of these great improvements. Dr. Auer von Welsbach's invention may be truly said to have been an epoch-marking event. Perhaps a more important fact in connection with it is that it has saved the gas industry from the assaults of its younger rival. The early mantles enabled a much larger amount of light to be obtained for a given expenditure of gas, because the mantle assumes a much higher temperature when the lamp is burning than the particles of carbon which are the source of illumination in the old open flame burner. As time has gone on, too, the mantle has been steadily improved. It is now made stronger, and will stand handling better than in the early days, and therefore the cost of renewals has been much reduced. The cost of the mantle itself has been reduced, until now the item of renewals in ordinary circumstances is trifling. The glass chimneys and shades used with the mantle have also been improved in design and manufacture, with the result that the heavy charge that was made for broken chimneys in the early days has also been considerably reduced.

For lighting indoors, and for confined spaces, the most important development by the gas industry during recent years has been the introduction of the inverted mantle. The inverted mantle not only gives a light free of shadows, while the upright mantle casts shadows from the supports of the burner, &c., but the illuminating value obtainable for a given consumption of gas is claimed to have been doubled. With the latest form of upright Welsbach mantle, an efficiency of 15 candles per cubic foot of gas consumed per hour is claimed. With the inverted mantle it is claimed that the efficiency has been increased to 30 candles per cubic foot. This means that the ordinary upright mantle, giving a light when the mantle is first fixed of about 60 candles, consumes 4 cubic feet of gas per hour, while the inverted mantle giving the same light consumes only 2 cubic feet per hour. If allowance is made for the sanguine statements of manufacturers, and for the unavoidable difference in goods manufactured in large quantities, for the difference in the illuminating value of the gas in different towns, and for other variables, it will be seen how enormously the illuminating power and the efficiency of gas has been increased since the days of the old open fish tail and bat's wing burner.

For the lighting of large rooms, such as classrooms, halls, and similar places, a good effect can be obtained by groups of inverted mantles, arranged inside ornamental shades, the whole being suspended from the ceiling, or from beams, in a manner similar to the pendent electric light. Fig. 1 shows an ornamental fitting for a single inverted mantle, made by Messrs. Jas. Keith and Blackman, and Fig. 2 is a fitting for two or more inverted mantles, made by the same firm. The fitting for a single mantle has an antivibrator above.

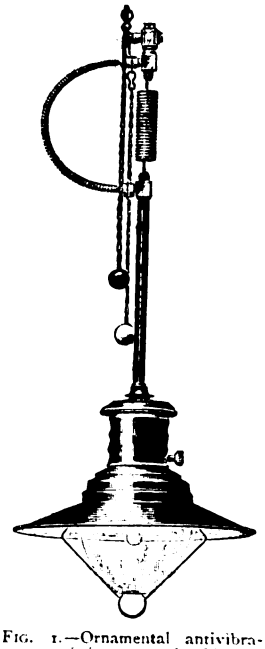

Fig. 1.—Ornamental antivibrator fitting, made by Messrs. Jas. Keith and Blackman, with a single inverted gas mantle.

For larger spaces, for large playgrounds, large halls, and other parts of large schools, where a high illumination is of importance, the high-pressure gas mentioned above can be employed. With high-pressure gas a special service is required, and the gas is compressed before delivering it to the service pipes to a pressure from 5 to 25 times that at which the ordinary town's illuminating gas is delivered. The increased pressure at which gas is delivered causes a better combustion of the gas, because the proper quantity of air required for complete combustion is obtained with the high-pressure gas, and the result is high units of illumination, combined with moderate cost for gas. With high-pressure gas an efficiency of 30 candles per cubic foot of gas consumed per hour is claimed with the upright mantle, and 60 candles per cubic foot with the inverted mantle. Groups of upright and inverted mantles are arranged in lanterns, two, three, or four mantles in a lantern, with reflectors, giving an illuminating value claimed to be from 1,500 to 4,500 candles, according to the form of the

mantle and the pressure at which the gas is delivered.

The compressor for the gas is a simple apparatus, that the engineer employed now at all large schools can easily look after. It can be driven either by a small gas engine, using the ordinary town's gas, a small electric motor, or a specially designed simple form of water motor, claimed to be economical in the consumption of water.

ELECTRIC LAMPS.

The rapid development of the Welsbach burner, and the reduced cost of gas in nearly every town of any importance, had rendered the competition between gas and the carbon filament incandescent lamp very keen indeed. In fact, gas was making the running very rapidly indeed, and displacing carbon filament lamps to a somewhat serious extent. At the prices at which electricity was sold in the principal towns, the cost of lighting by the carbon filament lamp was largely in excess of that by the Welsbach mantle. With the advent of the metallic filament lamp a few years ago, all that has been changed. The metallic filament lamp has come to do for the electric light what the Welsbach mantle did for gas, and to save the industry. There are practically two forms of metallic filament lamp now upon the market: those in which the metal tantalum is employed, and those in which the metal tungsten, or some alloy of tungsten, is used. With tantalum lamps the quantity of current required, with the same pressure, is approximately one-half that required with the old carbon filament lamp, for any given c.p. With the tungsten filament lamp, the current required with the same pressure, and the same c.p., is approximately one-third that of the carbon filament lamp. So serious is the reduction in the quantity of current taken by the metallic filament lamps, that some engineers in charge of electricity generating stations have been seriously considering the advisability of raising the price of electricity. For the sake of the future of the industry it is to be hoped that no such counsels will be followed. It is a well-known law that the reduction of price of any article leads to its increased consumption, providing the reduction in cost is within certain limits, which more than compensates for the decreased revenue received from each article. If electrical engineers will only be patient, and do their utmost to reduce the cost of generating electricity, the metallic filament lamp will bring them a much larger revenue than they could possibly have hoped for from the old carbon filament lamp.

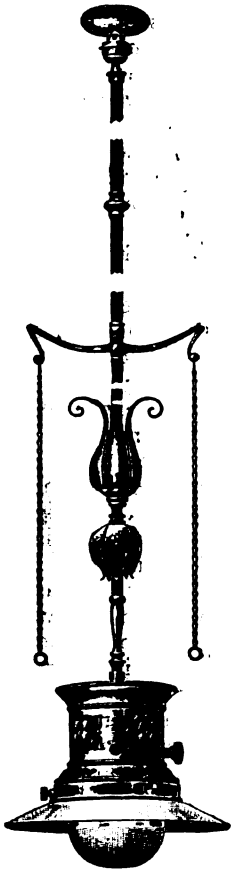

FIG. 2.—Ornamental fitting for two or more inverted gas mantles, made by Messrs. Jas. Keith and Blackman.

Meanwhile there are certain difficulties in the way of the use of the metal filament lamp. Until a few months ago, low c.p. lamps, those giving from 10 to 25 candles, were only made for low pressures, from 25 volts up to 130. The pressures employed in nearly every town at the present time, for the electric lighting services, range from 200 to 260 volts. Hence where low c.p. lamps were required it was necessary to run them two in series, to use two lamps where one had been used before. The arrangement necessitated also an adaptor to connect the two lamps to the holder which previously carried the one lamp, or the running of special wires connecting two lamps in different rooms or in different parts of a room together. With the alternating current the difficulty of the use of the low c.p. lamps has been overcome by fixing autotransformers at the entrance to each building, the autotransformer automatically converting the 200 to 260 volts pressure down to the pressure at which it is decided to burn the lamps, 25 to 130. Fig. 3 shows an Osram 16-c.p. lamp made for a pressure of 25 volts. The Osram filament is an alloy of tungsten. With direct currents, however, this arrangement cannot be used, and so the economy of the metallic filament lamp has not been fully obtained. Where the electric light was already in use, advantage has been taken in a great many cases of the higher efficiency of the metallic filament lamp to obtain a higher illumination for the same current. Readers will doubtless have noticed the different effect in the tradesmen's shops during the last two or three years, owing to the substitution of metallic filament lamps for carbon filament. The tradesman's bill for lighting is rather more than it was before, because of the cost of renewing the metallic filament lamps, but he has a higher illumination. The same thing may be done in schools, where the increased illumination will not give too glaring an effect. To meet this, again, a number of metallic fila-

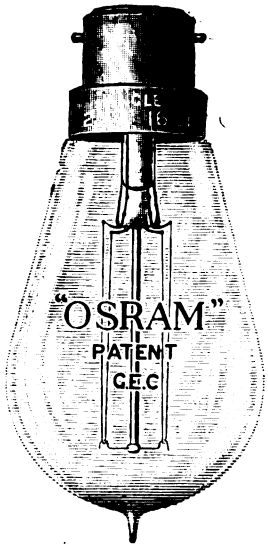

FIG. 3.—A 16 c.p. Osram Lamp, made by the General Electric Co. for a pressure of 25 c.p. As explained in the text, this pressure is obtained with alternate-current services by the aid of an autotransformer.

ment lamps have been introduced, in which the lower part of the globe of the lamp is frosted, so that the glare is masked.

Where this arrangement will be convenient, a substitution of higher c.p. lamps for the comparatively low c.p. carbon filament, the arrangement is very simple. It is merely necessary to remove the carbon filament lamps from their holders, and to replace them by metallic filament lamps of higher c.p., in the proportion of two or three times the illuminating value. Quite recently, however, one firm has introduced a certain number of lower c.p. lamps, for the higher pressures, and other firms are now following suit. Lamps are now obtainable of 16 c.p. for pressures of 200 to 220 volts, of 18 c.p. for 230 to 250 volts, and of 22 c.p. for 200 to 250 volts. Probably the 22 c.p. lamp will answer most of the purposes for which the old 16 c.p. carbon filament lamp was used. The new low c.p. high-pressure lamps are not quite so efficient as the lower pressure low c.p. lamps, but the saving in current will be very considerable by their use.

Another point of importance in connection with the metallic filament lamp is that, owing to the higher temperature at which it burns, the light given is white, where the old carbon filament lamp gave only a yellow light. The difference between a shop window lighted with carbon filament lamps, and with metallic filament lamps, is very striking, quite apart from the higher illumination usually obtained with the latter. Metallic filament lamps are also made for high c.p.'s from 200 to 400 candles, and for pressures from 100 to 260 volts. These lamps could be employed for the lighting of large class-rooms, halls, &c., or the rooms could be lighted by groups of the lower candle lamps.

The 10 c.p. to 50 c.p. metallic filament lamp competes with the Welsbach mantle giving 60 candles. It must be borne in mind that with both incandescent electric lamps and Welsbach mantles the light given decreases as the lamp burns. In the case of the Welsbach mantle, when a lamp gives a poor light, it can very often be increased by removing the mantle and blowing out the dust from the burner. The metallic filament electric lamps can also have the light given improved by keeping them well dusted. It is recommended by the makers that electric incandescent lamps should be wiped carefully, when they are burning, as there is a danger of breaking them if wiped when they are cold.

The metallic filament lamp has also an important advantage over the old carbon filament, and to a large extent over the Welsbach mantle, in that if the very fine wire forming the filament breaks, it can be welded together by gently shaking the lamp, and the lamp will go on burning as before, using a larger current and giving a smaller light.

Large Electric Lamps.

For the illumination of large spaces in schools, such as quadrangles, playgrounds, and large halls, the electric arc lamp competes with the high c.p. high-pressure gas lamps described above. It would perhaps be more correct to say that the gas lamps compete with the arc lamps, because it is gas which has seriously trenched upon what was thought to be the preserve of the electric light. At the Glasgow Exhibition of 1901, parts of the grounds were illuminated by high-pressure gas lamps, and other parts by electric arcs. The actual c.p. given by the gas lamps was not so great, according to the writer's measurements, as that given by the electric arcs, but the general effect was quite as good.

There are now three forms of arc lamps upon the market, the open arc, the enclosed arc, and the flame arc. The open arc lamp is the old lamp that has been before the world for nearly fifty years. It is very much improved, very much steadier, burns for a much longer time without attention, and is better generally. The enclosed arc lamp burns from 70 to 100 hours without attention, with one trimming of carbons, while the best forms of open arc only burn 18 hours. The enclosed arc gives a smaller light for the same expenditure of electricity than the open arc, but it has gradually displaced the open arc for the illumination of open spaces, because of the smaller attention required. The flame arc has been introduced during the last few years, and is steadily making its way. The great feature in connection with it is the absence of the shadows that are cast by the supports of the lower carbon with the open and enclosed arcs. The earlier flame arc lamps also gave a rosy light. Later forms have been arranged to give the same colour light as the enclosed and open arc. The attendance to the flame arc is about the same as to the open arc. It gives a very much larger amount of light than either the open or enclosed arc, and if certain salts are used to impregnate the carbons, the writer makes out from tests he has made, the quality is the same as during daylight. Fig. 4 is a view of the Albert Hall illuminated by "Excello" Flame Arc lamps, made by the Union Electric Co.

Cost of Different Forms of Lamp.

A good idea of the comparative cost of the different forms of lamp, using both gas and electricity, may be found from the formula,

$$C = w \times p + r;$$

where C is the cost, in any convenient unit, pence, shillings, or pounds, of 1,000 hours' use of the particular lamp; w is the number of cubic feet of gas per hour consumed by a gas lamp, or the number of watts required by an electric lamp; p is the charge per 1,000 cubic feet of gas, or per Board of Trade unit with electricity; and r is the cost of renewing the mantles, the incandescent electric lamps, or the carbons for arc lamps. The formula is obtained from the fact that gas is charged for at per 1,000 cubic feet, and electricity is charged at 1,000 watts for one hour.

Using this formula, the cost of a 60 c.p. up-

right Welsbach mantle for 1,000 hours is 10*s.* 6*d.*; the cost of a lamp of the same c.p. with inverted mantle is 5*s.* 6*d.*; the cost of a 50 c.p. tungsten metallic filament lamp is 12*s.* 6*d.*, and of a 25 c.p. 6*s.* 3*d.* The cost of a 1,500 c.p. high-pressure gas lamp with upright mantle is £6 10*s.*; that of a lamp of equal c.p. with inverted mantle £3 5*s.*, and lamps of higher c.p. in proportion.

The cost of arc lamps ranges from £6 10*s.* to £7 5*s.*

In the above calculations the charge for gas is taken at 2*s.* 6*d.* per 1,000 cubic feet, and the charge for electricity at 3*d.* per Board of Trade unit. Principals of schools, and others who are interested in the matter, can easily apply the rates ruling in their own districts.

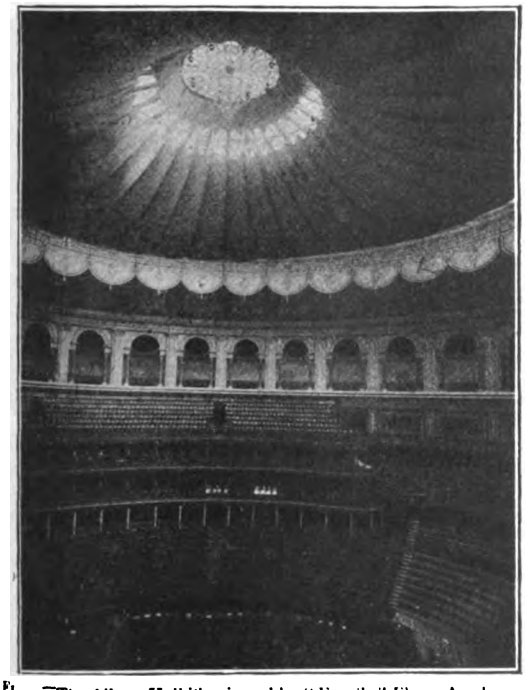

FIG. 4.—The Albert Hall illuminated by "Excello" Flame Arc Lamps, made by the Union Electric Co.

There are other charges in connection with both gas and electricity, such as attendance and other matters, but they amount to about the same with both illuminants, and can therefore be left out of the comparison.

PERSONAL PARAGRAPHS.

THE Plymouth meeting of the National Union of Teachers was presided over by Mr. Marshall Jackman, headmaster of the Sidney Road Council School, Homerton, N.E. He is a member of the Consultative Committee of the Board of Education.

* * *

ANOTHER member of the Consultative Committee is Miss Isabel Cleghorn, who holds the unique distinction of having been elected as the first woman Vice-President of the N.U.T. She will accordingly be next year's President. Headmistress of Heeley Bank Council School, she holds an influential position in the educational world of Sheffield.

* * *

THE Council of Wycombe Abbey School has appointed Miss M. A. Whitelaw headmistress in succession to Miss Dove. She is an M.A. Dublin, was educated at Auckland, New Zealand, and afterwards studied at Girton College, where she took a second class in the mathematical tripos of 1897. She then taught mathematics under Miss Dove, and was appointed a house-mistress in 1899. In 1907 she was appointed headmistress of the Auckland Girls' Grammar School, where she had experience and achieved success in educational organising.

* * *

THE death of Miss Mary E. Warne on March 29th will be mourned by a large circle, for hers was a well-beloved as well as a unique personality. She was the contemporary and friend of most of the Mid-Victorian women who did pioneer work, and was herself a notable worker in the educational and other forward movements of the 'sixties and 'seventies of last century, when she entered upon the work by which she will be remembered best. She joined the band of notable women whom Miss Buss gathered about her as colleagues, and the North London Collegiate School owed no little of its success and popularity to the genial, tactful secretary, to whom parents, pupils, colleagues, and strangers came for help and sympathy. After her retirement she enjoyed many happy, useful years, winning love and esteem from an ever-increasing circle of friends. These will derive melancholy satisfaction from the thought that she died at the house of her old pupil and friend, Miss Grace Toplis, in Camden Road, instead of among strangers, and that her three score and ten years ended in a brief illness (as she would have chosen), with no decay of mental or physical vigour to the last week of her life.

* * *

MR. JOHN LUPTON, a son of the late surmaster of St. Paul's School, has been elected headmaster of King Henry VIII.'s School, Coventry. He was educated at St. Paul's School and St. John's College, Cambridge, and became a fellow of his college. He took classical and theological honours. A brother of his is a master and librarian of Marlborough College.

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IN succession to the Rev. Darwin Wilmot, who has been headmaster for thirty-four years, Mr. F. D. Evans, assistant-master at Merchiston Castle, has been appointed headmaster of King Edward VI. Grammar School, Macclesfield.

* * *

THE REV. ROBERT ASHWIN, senior assistant-master at Royse's School, Abingdon, was selected out of some eighty candidates as head-

master of Magdalen College School, Brackley. He was a Bristol Grammar School boy and a scholar of Pembroke, Cambridge. Prior to his experience at Abingdon, he was assistant-master at King Edward VI. School at Grantham, under Rev. W. R. Dawson, the protagonist in the *cause celèbre* connected with Grantham School. Mr. Ashwin succeeds Rev. W. W. Holdgate, who has been appointed to Sutton Valence School.

* * *

Dr. Karl Breul has been appointed to the newly founded Schröder professorship of German at Cambridge. He was trained in Germanic philology at Berlin, and studied also in Paris. His official connection with Cambridge dates from 1884, when he became University Lecturer in German. His lectureship became a readership in 1899. In 1896 he obtained the degree of Litt.D. He has for some years been connected with the Cambridge Special Board for mediæval and modern languages, and is now acting president of the Modern Language Association, and has had an important share in the development of the *Modern Language Review*.

* * *

It is gratifying to find that Leeds University will, on June 11th, confer the degree of Doctor of Letters on Mr. Arthur Sidgwick, fellow of Corpus Christi College, Oxford. It may be safely said that no one has less sought honours and titles, but no one more deserves them for literary services than Mr. Arthur Sidgwick. Thousands of young students have found Virgil for the first time by Mr. Sidgwick's assistance, and not only Virgil, but also many an English classic, to whom a wise commentator skilfully led them. He has been the life and soul of more than one college literary society, and by his writings and lectures has done more than most professors of English literature to disseminate a feeling for, and correct taste in the works of the English classics.

* * *

Mr. Charles R. Peers has been appointed Inspector of Ancient Monuments. He was educated at Charterhouse and King's, Cambridge, and took classical archæology as Part ii. of his tripos. He has worked since 1905 as architectural editor of the Victoria County Histories. He has been secretary of the Society of Antiquaries since 1908, and is an Assistant Commissioner on the Royal Commission on Ancient Monuments.

* * *

The new Bishop of Lincoln early in life left a definite impress on modern classical scholarship by his studies in Greek epigraphy, and particularly by his "Manual of Greek Historical Inscriptions" (1882), which is the standard work on the subject. He was born in Oxford in 1843, educated at Magdalen College School and Brasenose College, and gained first classes in Mods. and Lit. Hum. He was a Craven scholar in 1867, and won the Chancellor's Latin Essay Prize in 1868. He was elected to a fellowship at Corpus, where he served as tutor, dean, and librarian, and left Oxford in 1873 for the Corpus living of Fenny Compton, near Leamington. He has been closely connected with Manchester since 1886, when he became the first principal of Hulme Hall, and since when he has played an important part in the development of the local university.

* * *

By the death of Mr. Richard Dacre Archer-Hind, Cambridge loses one of her most brilliant scholars. He was born in 1849, and educated at Shrewsbury under Dr. Kennedy, proceeding to Trinity, first as scholar and afterwards as fellow. He was bracketed third classic in 1872. From 1875 to 1903 he was classical lecturer at Trinity, and was famous for his exquisite gift of classical composition, especially in Greek. He also distinguished himself as a student of Plato and philosophy in general. He took a strong interest in, and personally laboured for, the cause of the university education of women.

* * *

The higher education of women has also lost a good friend and champion in the person of Sir William Bousfield, who took a leading part in the Girls' Public Day School Company, of which he became chairman in 1896, after having qualified himself by many years' service on the London School Board. He went to Oxford in 1862, and took a second class in the Law and History School. He travelled in Italy, and returned to England in 1868 to be called to the Bar, at which he never practised. After his marriage he settled down to a life of ungrudging social service in London.

* * *

The late Bishop Barry, Metropolitan of New South Wales and Primate of Australia, had a distinguished educational career before he accepted the See of Sydney in 1883. Born in London in 1826, he was educated at King's College, and proceeded to Trinity, Cambridge, where he had a brilliant career, coming out fourth wrangler and seventh classic, and being elected to a fellowship. He left Cambridge to become sub-warden of Trinity College, Glenalmond. From 1854 to 1862 he was headmaster of Leeds Grammar School, and then worked successfully for six years as principal of Cheltenham College. He returned to King's College as principal in 1868, holding along with that office successively canonries of Worcester and Westminster.

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Congratulations to Dr. Gray on having taken his first batch of public-school farmers to Canada, and to Prof. Michael Sadler on having entered a strong plea for the encouragement of semi-autonomous endowed schools as a guarantee of variety in education.

Onlooker.

THE ACHARNIANS OF ARISTOPHANES.[1]

IT is only a short time since we reviewed Mr. Rennie's "Acharnians," and now here are two others. This would be remarkable in any case, but it is especially so since all three are important books, the fruit of independent study, and each has special points of merit. Mr. Starkie has already earned his spurs as a critic of this author, and his new book is in some respects more excellent than his "Wasps." We refer to the two new elements in it, the prose translation and that part of the introduction which deals with literary criticism, a section entitled "Aristotle on the Laughter in Comedy." Aristotle's "Poetics," as our readers know, is incomplete, and part of it once dealt with comedy. This part appears to be represented by a bald summary, discovered fifty years ago. Mr. Starkie takes the headings of this summary and groups under them a mass of examples from Aristophanes; further, he illustrates these by lists of examples from the Elizabethan drama.

A famous German scholar once described the qualities which an editor of Aristophanes should have; at the end of them he solemnly placed, "Er muss Spass verstehen." We all know how many of the tribe of commentators fall short of this, not only amongst his compatriots; more than one good jest of our author's has been spoilt by emenders who could not *Spass verstehen*, especially that kind of *Spass* which consists in nonsense. Henceforward he will have no excuse: Mr. Starkie has told him what to laugh at. Mr. Starkie in this respect is well equipped; he does enjoy his Aristophanes, and he has put him into very vigorous English. Most of his renderings are admirable, taken singly; it must be confessed, however, that he overlabours his antique style now and then, and is sometimes too free (as p. 57); sometimes he gives us a very modern touch in the midst of it. But his translation and notes are full of English turns and parallels, thoroughly idiomatic; and it must surprise any reader to see how close is the parallel between Athens and England here. His book will be a mine for the literary critic.

The notes leave nothing unattempted, although some dark points are as dark as ever; for instance, 127, 230 f., 709 'Αχαία. In the first of these we do not feel Mr. Starkie's difficulty as to the construction, since the position of ξενίζειν makes all clear: "for entertaining them, every door flies open." There is no more need of a passive here than in "A house to let." We do not think Mr. Starkie's judgment in textual difficulties is as good as it is in literary questions; he emends unhappily, we think, in several places (as 327). Nor can we approve of the suggestion that π might be pronounced as β after ν (234); precision of speech was a mark of ancient Athens above all other peoples. To select from the good notes would be a waste of time: they are nearly all good, and they show a deep knowledge of the author's usage.

Mr. Rogers we know, and we look for him as a rare intellectual treat. His blank verse is not so easy as it might be; but the rimed verses, and especially the lyrics, more than make up for this. His ear for rhythm is so good, his riming so fertile, that the reader is always charmed. The language is so perfectly natural that the rimes seem to grow out of it because they cannot help themselves. As a special example of his skill we mention the cretics, 208–232, and for a new effect of assonance the endings of 978–986. Mr. Rogers is a conjuror with words, and we wish there were a hundred plays of Aristophanes for him to translate. The Megaran and Boeotian dialects are wittily represented by Scotch. If only one had been Irish!

The introduction discusses Aristophanes's citizenship, his early plays, the names under which they were produced, and Cleon's attack. In these questions Mr. Rogers appears to us perfectly sound: his reasoning is clear and cogent, and his hypotheses fit the facts. Incidentally, he makes some ingenious suggestions on points of detail. Why does Photius say anything about the archonship of Euclides in giving the date of "The Babylonians"? Because, says Mr. Rogers, some give the name Euclides, not Eucles, to the archon of the year when that play was produced. The mock trial of Labes in "The Wasps," on the accusation of Κύων, was a caricature of the impeachment of Laches by Cleon after his return from Sicily. The editor also notices certain touches in Thucydides which seem to show that Thucydides thought highly of Aristophanes's historical judgment, and that "many statements in Thucydides are due to his recollection of the comedies of Aristophanes." The question of the Dionysia is also discussed, and Mr. Rogers comes to the conclusion that τὰ μικρά are not the same as the Lenaea; τὰ μικρὰ being, in fact, the trifling shows held in the villages; the Anthesteria, however, he holds to have been another name for the Lenaea. He has also a word to say of the ἐκκύκλημα, which he holds to have been a pivoted wall, not a platform; and a page or two on Chrysostom's use of Aristophanes. The introduction is entirely different from Mr. Starkie's, one part of which is described above.

The notes are not made on the same plan as Mr. Starkie's: they are strictly explanatory, and thus they contain fewer Greek and other parallels. They deal fully, however, with all dramatic points. One or two may be mentioned. Mr. Rogers takes ἀναβάδην and καταβάδην, 399, as up aloft and down below, not in the usual sense, without sufficient reason, we think. In 401 he reads ὑποκρίνεται with the Ravennas, taking it in the sense of ἀποκρίνεται because of the context, and quoting Thuc. vii. 44, Homer, and Herodotus. In placing the Lenaeum (504) he does not notice Dörpfeld's identification of the site with a little

[1] "The Acharnians of Aristophanes." With Introduction, English Prose Translation, Critical Notes, and Commentary, by W. J. M. Starkie. xc+274 pp. (Macmillan.) 10s. net.
"The Acharnians of Aristophanes." The Greek Text Revised, with a Translation into Corresponding Metres. Introduction and Commentary, by B. B. Rogers. lvi+238+xii pp., and title to vol. i. (Bell.) 10s. 6d.

wine-press he dug up near the Areopagus: we do not admit it, but Dörpfeld's theories have such a vogue that it is well to discuss them. Mr. Rogers's dry common sense is well shown in the note on 508; we like him especially when he deals with the pedant. In 546 he takes the same view of *περὶ τριηράρχου βοῆς* as Mr. Rennie and Mr. Starkie, but without noticing the common mistake. He has a new view of *δημοκρατοῦνται*, 642, how the subject allies are governed by the Athenian democracy. This view is also taken by Mr. Starkie, without comment. The *σάκκος* in 745 he rightly takes as a disguise for the skin of the pig; not, as Mr. Starkie and others, for a bag. On 849 he gives cogent reasons for regarding Cratinus as not the comic poet. In 924 he adopts the reading *αἴφνης*, with good grounds (but in 183 he reads *ἀμπελίων* for *ἀμπέλων* without any).

In the appendix we read a welcome refutation of the charge that Elmsley stole Porson's emendations. The charge, repeated by Dr. Sandys in his "History of Classical Scholarship," has no foundation: it refers to the emendations of Athenaeus, twenty-one in number, of which three only accidentally agree with Porson's, but all are quite obvious and would occur to any scholar. But Mr. Rogers is not a partisan of Elmsley: he justly finds fault with him where he is the sport of his own theories (crit. n. on 127).

We are gratified to have two such comprehensive editions, each containing so much that the other has not, and both so good. The learner will find Mr. Rogers the more useful; he who knows "The Acharnians" will be better able to profit from Mr. Starkie.

STUDIES IN THE TEACHING OF HISTORY.[1]

MR. KEATINGE'S valuable studies are the work of an expert who on one hand has a high opinion of the importance of history as a subject of instruction, but who on the other is fully alive to the peculiar difficulties which it presents to the teacher. The opening study on "Method and Value" examines in a most interesting and illuminating manner the qualities of history which make it less easy to use effectively as an instrument of education than, say, classics or mathematics. It is not possible, Mr. Keatinge contends, to make a steady and systematic advance from simple elements to complex applications; it is not easy to set homework which is different in kind from work done in school; it is hard to test a pupil's work in such a way as to discover what is his own and what his teacher's. Now Mr. Keatinge rightly urges that unless some sort of historical exercises can be provided which shall demand real independent thought on the part of the pupil, history must fail to fulfil one of the main functions of education.

He does not, however, consider that the task of providing such exercises is a hopeless one. In some highly original and suggestive chapters he shows how easily accessible and inexpensive "original sources" can be employed for the purpose. He carefully avoids the American error of supposing that from these sources a pupil can learn his history or construct his own text-book; but he shows by numerous examples how they can be employed to furnish admirable opportunities for the application on the part of the pupils of those generalisations which they have learned in class or from their text-books.

Mr. Keatinge subjects to damaging criticism some of the examination papers recently set by several of the great examining bodies. Having done so, he gives a model paper embodying his own principles. It is deserving of the most respectful attention. Its adoption will no doubt be somewhat impeded by the fact that it occupies seven octavo pages, and thus requires from ten to twenty times as much print as the ordinary specimen.

1 "Studies in the Teaching of History." By M. W. Keatinge. viii+232 pp. (Black.) 4s. 6d. net.

THE TEACHING OF SCIENCE.[1]

TWENTY-ONE essays, written by nineteen separate authors, who consider such different topics as "Science in the Teaching of History" and "Science Teaching and a Child's Philosophy," should provide useful guidance to science teachers. The editor tells us in his preface that the papers deal with the teaching of science to boys and girls of secondary-school age; but this scope seems to have been somewhat extended by the writers since the paper upon nature-study considers, *inter alia*, the best syllabus for children of the age of seven and under. It is impossible in a short review to deal adequately with the vast field covered by this book, but we would say at once that in our opinion it should be read by every educationist, and should be found on the shelves of all science teachers; its chief fault is that the editor in attempting to collect so much material has been obliged to condense unduly the various papers. It is doubtless a compliment for an author to be told that he has left his readers "asking for more," but it must be remembered that this request may be prompted by the insufficiency as well as by the excellence of the fare provided.

Prof. Sadler supplies an interesting introduction, in which he traces the growth of the scientific movement in English schools, a movement which he considers of equal importance with the classical renaissance of the sixteenth century. The introduction is followed by a paper upon "The Place of Science in the School Curriculum" and by two upon nature-study, after which Mr. O. H. Latter deals with the question of biology; whilst granting that in methods of precision and in exact reasoning physics and chemistry have the advantage over biology, he maintains that these subjects are inferior to it in quickening the power of observation, and he doubts whether they

1 "Broad Lines in Science Teaching." Edited by F. Hodson. xxxvi+267 pp. (Chistophe.) 5s. net.

are so well suited to a scheme of general education. Dr. T. P. Nunn, in a very interesting paper upon "Hypotheses in Science," deals chiefly with the manner in which the atomic theory should be presented to beginners, his conclusion being in favour of "the early introduction of the *terms* atom and molecule, in senses which preserve all the implications necessary to make them useful instruments of description and investigation, without carrying the further, and possibly illegitimate, notion of material discontinuity."

The editor, in a paper upon "The Claims of Research," advocates the opening of school laboratories during "free time," in order that the pupils may undertake elementary research work; the idea is excellent where it can be carried out, but we much doubt if many schools would be able to persuade their scholars to undertake voluntarily such recondite operations as the separation of cerium, lanthanum and didymium from cerite, and to make a study of the absorption spectra of the latter substance; an exercise which we are told was recently performed by the boys at Bedales. Mr. T. J. Garstang writes upon "Mathematics in Relation to Science," and advocates afresh that beginners should not be forced to waste time in proving the obvious; he mentions, with approval, a method tried at Bedales of co-ordinating the teaching of the two subjects by letting the classes obtain quantitative results in the physics laboratory, and using the resulting curves to obtain the corresponding algebraical functions. He confesses that at times "a certain amount of smoothing was required to make the curves tractable," and a few of the examples he gives seem to us to be hardly suitable for such treatment; *e.g.*, obtaining a graph of the inverse cube from observations upon the ratio of the strength of a magnetic field due to a short magnet, and the distance of the latter from a point.

The paper which will probably raise most controversy is Prof. A. W. Porter's upon the "Co-ordination of Physics Teaching in School and College"; the title hardly describes the character of this essay, which is chiefly concerned in urging that electrostatics is best studied before current electricity, and that secondary schools are not the places for teaching either. One of the most valuable papers, although but slightly connected with the others, is Mr. Unwin's "Science Teaching and the Training of the Affections," in which he speaks clearly and sensibly of the training every boy and girl should receive in the laws of sex; if only parents would do their duty in this respect how much anxiety would be spared schoolmasters and mistresses! After a short account of science teaching in America and Germany, the volume concludes with "Some Practical Notes upon Planning Laboratories," by Mr. T. H. Russell.

MESSRS. CASSELL are issuing, in fourteen fortnightly parts, a "new and revised edition, with illustrations," of Messrs. Low and Pulling's *Dictionary of English History* at the price of 7*d.* net each part.

CAMBRIDGE LOCAL EXAMINATIONS, 1909.

HINTS TO TEACHERS FROM THE EXAMINERS' REPORTS.

COMPULSORY SECTION.—A question in the *Preliminary* paper in *Arithmetic* on Greatest Common Measure was not, as a rule, solved correctly by those who used the method of factors. Few of the candidates deduced the result of one division of decimals from another division containing the same numbers in the divisor and dividend with the decimal point differently placed: almost always the division was worked out separately. Many who knew the method of calculating Simple Interest got the result wrong by mistakes in cancelling. A question in Profit and Loss was beyond the power of the majority of the candidates. A very common mistake was the assumption that ten square decimetres equal one square metre.

Considerable weakness was shown by *Junior* candidates in decimals and decimal measures. Questions which should have been worked by decimal processes were often made more difficult by the conversion of the decimals into vulgar fractions; on the other hand, candidates not infrequently replaced an easy vulgar fraction by a decimal, sometimes a repeating decimal, in the management of which they were quite unskilled. Much of the blundering was due to carelessness and want of thought. Candidates frequently took down wrongly the data given in the questions, and even transcribed wrongly their own figures. It would be well if they were warned that the error of transposing two adjacent figures—*e.g.*, of writing 5640 for 5460—is very easily made; mistakes of this kind were frequent. There was also much confusion between Least Common Multiple and Greatest Common Measure.

In December some *Senior* candidates were unable to find the Highest Common Factor of three numbers, and others were inaccurate in working with decimals. Sometimes the calculation for brokerage presented difficulties.

ENGLISH SECTION.—A question on pronouns in the *English Grammar* paper was seldom answered rightly by *Preliminary* candidates, and much confusion was shown with regard to transitive and intransitive verbs. Many *Junior* candidates confused *phrase* with *clause* in forming sentences. The definition of *tense* was in most cases incomplete. A good many of these candidates confused the prefix *anti-* with *ante-*, and *for-* with *fore-*.

Wearisome repetitions of the same form of sentence were common in the *Composition* of *Junior* candidates. In some cases simple rules of punctuation seemed to want attention. The question dealing with prepositional phrases was very poorly treated.

The letters of the *Juniors* showed that there is much need of instruction in letter-writing. The majority of the candidates seemed to have no notion of any correct form of concluding a friendly letter. Some saw no necessity to give their address and the date, and a very great number expressed their acceptance of an invitation as a future event.

In the July examination the *Senior* candidates in the *Composition* examination, when writing upon controversial subjects, displayed a lack of logical reasoning and of a clear perception of the tendency of the arguments advanced. In December the candidates very frequently failed to deal satisfactorily with the passages set for emendation. In July a letter in reply to an invitation was in many cases disfigured by flippancy and the use of slang expressions.

A question on words and phrases proved a stumbling-block to many *Preliminary* candidates taking the paper on Lamb's "Tales," and too frequently Macbeth's career was given instead of his character.

Of the answers of *Junior* candidates to the questions on Shakespeare's "Julius Caesar," the examiners say the division into metrical lines was quite often faulty, while still more often the punctuation was either ignored or else carried out unintelligently. Certain words were misspelt by almost all the candidates. The answers, though frequently diffuse and verbose, showed considerable facility of expression. A more terse and pointed style would have been more serviceable. The meaning of passages to be paraphrased was often given too vaguely and freely; many candidates merely gave a *précis*, while some wrote absolute nonsense. The words of the play were frequently quoted where the candidates' own words were asked for. Questions on the motives of characters in the play were often inadequately answered. Not a few candidates failed to read the questions carefully. The answers of *Senior* candidates to questions bearing upon individual characters and their motives and actions in the play consisted, far too generally, of slavish reproduction of matter furnished by introductions to text-books, while appreciations of dramatic effect were often, on one hand, too vaguely expressed, and, on the other, obscured by far too copious verbal quotations.

It appeared that at many centres little time had been given by *Senior* candidates to the study of *English Literature*, especially by the boys. Those who failed generally failed completely; of those who passed, a large proportion showed a knowledge of the outlines of literary history, identified and gave the context of selected passages from English authors, and wrote creditable answers to questions relating to the plots or characters of Shakespeare, Scott, Dickens, and Thackeray; such answers often gave evidence of a first-hand acquaintance with the books in question and a genuine interest in them; not a few candidates, however, betrayed by some egregious mistake that they had merely read analyses or descriptions of the books. Diffuse and irrelevant answers were far less numerous than in the preceding year, and in July the candidates were better acquainted with the meaning of common literary terms; this improvement, however, was not fully maintained in the December examination. Ignorance of the leading points of literary chronology was again noticeable in a large number of papers. As a rule, much more attention had been paid to poetry than to prose.

The questions in *English History* which received the most satisfactory answers from *Junior* candidates were those which asked for biographies of notable men, though even these showed a tendency towards irrelevant anecdote. In the case of many other answers a complete misunderstanding of the question was evident.

Commenting on the English history answers of *Senior* candidates, the examiners remark that it is clear that in many schools larger and better text-books should be introduced, so that some knowledge of the growth of the colonial empire and of the constitutional and economic sides of the national development can be acquired. While many candidates, being well trained, were fairly intelligent in their use of such terms as "representative," "constitutional," "villenage," and "the poor law," a large section had only the vaguest conceptions concerning them, and were also confused as to the difference between a ministry and parliament. But if in some schools these terms can be made clear to the pupils, the examiners think it ought to be possible to make the bulk of the senior candidates understand them.

A prominent fault in the *Geography* of *Preliminary* candidates, more particularly in the July examination, was want of precision in describing positions, and this was apparently due quite as often to a habit of inexactitude as to lack of knowledge. Answers such as "Japan, off Asia; New Zealand, in the Pacific," were common. Candidates occasionally answered by sketching positions, and it was apparent that some who tried both methods did themselves more justice by graphic representation than by written description. Questions on the rivers of the world were badly answered. It was evident that this part of the syllabus had not received sufficient attention.

More than half the *Junior* candidates (expanding the word "centre" in their text-books) stated that "the interior" of Ireland was mainly bog, and thus presented an easy explanation of the sparse population. The answers of nearly all were disfigured by careless inversion: "east" and "south-east" were used when "west" or "north-west" were intended, "cotton" for "linen," "below sea-level" for "above." Portland changed places with Portsmouth, Dartmoor with Exmoor and Dartmouth, St. Catharine's Head with St. David's; while "marine engines" became locomotives, and the Severn bore was interpreted to mean the "tunnell" beneath that stream.

The more obvious facts of geography were, as a rule, fairly well given by *Seniors*, but the attempts to explain geographical conditions were often unsatisfactory. The positions of towns were known, but the natural advantages of their sites, and the causes of their growth or decay, had seldom been studied. Particularly noticeable was the ignorance commonly shown as to climatic influences. The connection between the climate and products of South America, and between the climate and development of Western Australia, was seldom understood. Some good maps were drawn, but many were unsatisfactory, and in too many cases none were given. In maps of rivers too little care was taken to indicate correctly on which bank the towns stood.

CLASSICAL SECTION.—The attempts of *Junior* candidates at parsing in *Latin set books* frequently revealed ignorance of ordinary Latin inflexions and of the meaning of common grammatical terms. In alternative unprepared translation the work in December reached a distinctly higher level than in July, but at both examinations, though some papers were good, the subject was taken by a number of candidates who were obviously quite unfit to attempt it.

In the July examination, and to a less extent in that held in December, the best feature in the *Grammar* was the parsing, which redeemed many papers otherwise poor; at the same time, full advantage was not taken of the fact that all the words were selected from one of the passages set for unprepared translation, inasmuch as there were very frequent errors in particulars (*e.g.*, the genders of substantives) which could have been ascertained by reference to the passage. In the December examination, particularly, there seemed to be a considerable number of candidates who did not know the meaning of the request to "parse" a word. In neither examination was the work up to the usual standard (except in the case of one or two of the larger centres), especially as regards the declension of adjectives and pronouns; this was particularly the case in the December examination, less than 15 per cent. of the candidates, for example, giving correctly the genitive and dative of *totus*.

In both the July and the December examination the *Composition* was, as usual, the weakest point. But at some few large centres great attention had been paid to this part of the subject, with the result that a large percentage of the candidates qualified for the mark of distinction. In July many of the weaker candidates attempted the harder passage; in December such cases were comparatively rare. Candidates whose vocabulary and syntax

are both weak should be warned against attempting the more difficult task.

The large majority of the *Senior* candidates offered Virgil in preference to Plautus, and had evidently studied the book carefully for purposes of translation, but not sufficiently to be able to explain peculiarities of syntax or literary allusions.

MODERN LANGUAGE SECTION.—The *French* accidence of *Preliminary* candidates showed no improvement as regards verbs and pronouns, but the questions on nouns and adjectives were satisfactorily answered. The translation into French was satisfactory in but few cases, inaccuracy in grammar being the predominant feature. The composition of French sentences left much to be desired; a certain number of the candidates wrote carefully and accurately, but the majority ignored the most elementary rules of the language.

In the *French* accidence a large number of *Junior* candidates spoiled their answers by carelessness, giving masculines for feminines and singulars for plurals. The use of the imperfect for the past definite in narrative was very common. The work of the candidates who chose the alternative of "free composition" was especially poor. Many of them, after writing a few lines of fairly correct French, lapsed into a hopeless stream of blunders. Many, again, filled up their space with dates and names; very few sent up really satisfactory essays. The great majority of the candidates did not understand the few idiomatic expressions contained in the extracts. There were many examples of mere word for word translation, irrespective of sense or context. The verse extract was taken by about half the candidates in July, and by a much larger proportion in December. The girls did much better than the boys. The grammatical questions were poorly answered by *Senior* candidates taking *French*. As usual, the weaker candidates took refuge in the free composition and indulged in trivialities and platitudes for which little credit could be given.

MATHEMATICAL SECTION.—A considerable number of *Preliminary* candidates entered for *Geometry* without any reasonable prospect of passing in it; some of them seemed to have had hardly any teaching in the theoretical part of the subject. In answering the practical questions, many of the candidates paid little heed to the magnitude of the angles they were asked to draw or to the prescribed lettering of the figures. Many mistakes in the drawing of the figures were apparently due to want of familiarity on the part of the candidates with the instruments of which they made use.

Two triangles were often said by *Junior* candidates to be congruent when two sides and a non-included angle had been proved to be equal. This fatal mistake would probably be less common if teachers pointed out more often that the statement that the angle is an *included* angle is a necessary part of the proof of congruence. Many candidates asserted that two triangles were congruent when the three angles of the one had been proved equal to the three angles of the other. Proofs of Euclid I. 6 by "turning over" were not very successful. At some centres all the candidates assumed that a parallelogram was equal in area to a rectangle on the same base and with the same altitude in order to prove that parallelograms on the same base and between the same parallels are equal in area. The majority of the candidates failed to draw a parallelogram of which a side, an angle, and the area were given. The distinction between *touching* and *cutting* was often overlooked, and attempts were sometimes made to prove theorems by measurements on a more or less imperfect diagram.

In the answers of the *Seniors* to the more elementary questions, the mistake was often made of inferring the equality of sides which were not opposite to the equal angles in congruent triangles, or of inferring congruency from the equality of two sides and a non-included angle. Many candidates assumed that the diagonals of a quadrilateral bisect the angles, and many assumed that the sides of a hexagon are equal. There was a tendency to prove propositions by others which in all systems are dependent upon them (*e.g.*, Euc. I. 35 by Euc. I. 37 and Euc. VI. 2 by Euc. VI. 4). In the answers to the practical questions construction lines were in many cases not clearly shown, and geometrical methods were insufficiently made use of; the protractor was often used where a geometrical construction would have given the result more quickly as well as more accurately.

In the *Algebra* papers of *Preliminary* candidates straightforward exercises on the fundamental operations were accurate, though the purpose of numerical checks was often not understood, and notably wrong solutions of simultaneous equations might have been avoided by a habit of testing results. In the graphs—some of which were excellent—the axes and scales were often not clearly indicated and numbered. Many candidates failed to show that the intersection indicated on the graph was a solution of the given equations. Among the *Juniors*, one of the most noticeable weaknesses was the arbitrary changing of the signs of all the terms in an expression. There was also much inaccuracy in simplifications, and a general want of intelligence in dealing with fractions.

Both in July and in December very few candidates attempted to solve the questions set in Part II., the work in permutations and combinations being especially weak. The question on the use of tables of logarithms was answered rather better in December than in July, but extremely few of the candidates showed any knowledge of the Binomial Theorem. On the whole, there is much room for improvement, the teaching in many parts of the country being evidently unsatisfactory. The arithmetical operations of *Senior* candidates were very frequently inaccurate, and there was pronounced weakness in the use of logarithmic tables; many of the candidates were unable to deduce antilogarithms from a table of logarithms. The work on simplification of algebraic expressions was, as a rule, very clumsy and long. Most of the candidates knew the formula for finding the sum of an infinite number of terms of a geometrical progression, but a considerable number of them did not really understand how to obtain it.

NATURAL SCIENCE SECTION.—In *Chemistry* a want of accuracy was shown by *Preliminary* candidates in the description of experiments, and it was obvious that many of the candidates had not had sufficient practice in answering questions. Some candidates used the formulæ for substances as a general substitute for their names, a practice which ought not to be encouraged by teachers. The question on chalk and lime in the July paper, and the one on coal-gas in the December paper, were not well answered. Candidates should remember that stating the result of an experiment is not equivalent to describing the experiment.

The unsatisfactory answers of *Junior* candidates were those which required definite knowledge of such general principles as oxidation and reduction, the explanation of such words as acid and base, and the interpretation of chemical equations. In the July examination the question on the oxides of lead was well answered by only a few of the candidates. The conclusions arrived at by many of the candidates in their practical work appeared to be mere guesses, unsupported by any experimental evidence of value. An extraordinary number of the candi-

dates failed to record water as one of the products of a reaction, although it was yielded in considerable quantity. At some centres the candidates very generally "analysed" all the substances given, quite disregarding the questions set, and throughout the examination insufficient attention was paid to the instructions. A few *Senior* candidates in their written answers dragged in a particular hypothesis —the ionic hypothesis—where it was not required, and gave the impression that they had been taught to regard that hypothesis as a justification of the facts.

In the December examination in *Heat*, at several centres the *Junior* candidates appeared not to have themselves made an experiment to find the latent heat of fusion of ice. The work of the *Senior* girls was extraordinarily inferior to that of the boys. This may perhaps point to lack of laboratory experience; but it plainly indicated want of power to *apply* physical principles, for most of the questions required some thought as well as book-knowledge. Also the girls were handicapped in the calculations by their weaker arithmetic. In general, more attention should be given to physical arithmetic; boys and girls alike were apt to carry their divisions to an absurd number of places out of all proportion to the possible accuracy of the measurements on which their calculations were based.

With regard to the practical questions in *Botany* of the *Juniors*, it was surprising that hardly any of the candidates really understood the morphology of the compound leaf, and that the structure of the fruit of the common Hawthorn should have proved a stumbling-block to so many. A very large percentage of the candidates also failed to recognise a shoot of the common Sycamore. In the July examination the treatment of questions dealing with plant physiology showed distinct improvement, but it must be said that the oft-quoted experiment of covering a plant with a bell-jar in order to demonstrate transpiration should be discarded in favour of some more crucial test. In December the description of experiments was again a notably weak feature, and much ignorance was displayed on such a fundamental point as the germination of the seed. Great importance should be attached to the illustrations, and it is to be regretted that the instruction to employ diagrams in every answer continues frequently to be ignored.

There was evidence that the performance of simple physiological experiments by the *Senior* candidates is becoming more common, with the result that the descriptions of these were more satisfactory. There is still room, however, for a great improvement in this respect. Those who have not actually performed the experiments will almost certainly omit essential details.

In the description of plant structures there was a deplorable tendency to write the description from preconceived notions rather than from the actual specimens provided. The sketches accompanying these descriptions were often poor and inadequate. The answers to the remaining questions indicated a want of practical acquaintance with common plants. Greater attention should be paid to the relation between the habits of plants and their mode of life; for example, in December scarcely any candidate mentioned the fact that climbing plants are sensitive to contact, and are thus enabled to adopt the climbing habit.

In the answers in *Physical Geography*, the questions on climate were, as a rule, well done by the *Juniors*, but there was little evidence of any practical acquaintance with meteorological instruments. Much confusion appears to exist regarding the respective functions of the barometer and the thermometer. More attention should be paid to mapping, especially by teachers in girls' schools. The answers were frequently very badly expressed, and in many cases the omission of essential words rendered sentences wholly unintelligible. Few of the *Senior* candidates showed any knowledge of the way in which land-forms are produced or of the agencies which modify them. To judge from their answers, the candidates appear to have studied the astronomical and meteorological sides of the subject and to have neglected the morphological side.

OXFORD LOCAL EXAMINATIONS.

Set Subjects for 1911.

There will be a Senior and a Junior Local examination in the week March 13th–18th, 1911, as well as in July. A Preliminary examination will be held in July only.

Preliminary, July (only).

Religious Knowledge.—(*a*) Ezra, (*b*) St. Luke (chap. vi.–end), (*c*) Acts (chap. i.–xii.), (*d*) the Church Catechism.

English History.—Either (α) the Outlines from 55 B.C. to 1399 A.D., or (β) the Outlines from 1399 to 1714 or (γ) the Outlines from 1689 to 1837.

English Author.—(i) Either (α) Defoe, "Robinson Crusoe," Part I., or (β) Scott, "Lady of the Lake"; (ii) either (α) Scott, "Ivanhoe," or (β) "Poems of England," by George and Sidgwick (xi.–xvi., xxv.–xxviii., xxxii.–end) (Macmillan).

Geography.—The geography of one of the following: (α) England and Wales, (β) Scotland and Ireland, (γ) India.

Elementary Latin.—"Tales of Early Rome," Sections i.–iv., by J. B. Allen (Clarendon Press).

Elementary Greek.—Marchant's "First Greek Reader" (pp. 1–27) (Bell and Sons).

Elementary French.—Either "Pierre et Camille," by Musset (Hachette), or "Quinze jours au désert," by Tocqueville (Clarendon Press).

Elementary German.—"Der Schlüsselbund" and "Jagderfolge," in "Short German Plays," by E. S. Buchheim (First Series) (Clarendon Press).

Junior, March and July.

Religious Knowledge.—(*a*) Ezra, Nehemiah, Haggai, (*b*) St. Luke, (*c*) Acts, i.–xv., (*d*) Prayer Book (comprising the Church Catechism, the Morning and Evening Services, and the Litany).

Ancient History.—The Outlines of Roman History from 509 to 242 B.C., with special questions on the First Punic War.

English History.—Either (α) the Outlines from 55 B.C. to 1135 A.D., or (β) the Outlines from 1066 to 1485, or (γ) the Outlines from 1485 to 1714, or (δ) the Outlines from 1689 to 1837.

General History.—Either (α) from 1066 to 1516, or (β) from 1500 to 1715.

Foreign History.—The Outlines of General European History from 1815 to 1876.

English Literature.—(i) Either (α) Tennyson, "The Marriage of Geraint," "Geraint and Enid," "The Holy Grail," or (β) Shakespeare, "Merchant of Venice"; (ii) Shakespeare, "Midsummer Night's Dream," "As You Like It," "Tempest"; (iii) either (α) Shakespeare, "Julius Caesar," or (β) Shakespeare, "Richard II.," or (γ) Scott, "Marmion," or (δ) Scott, "Rob Roy"; (iv) either (α) Milton, "Comus,"

"L'Allegro," "Il Penseroso," "Sonnets," or (β) "Poems of England," by George and Sidgwick (Macmillan); (v) either (α) "The Oxford Treasury of English Literature," vol. i. (pp. 82–end), by G. E. and W. H. Hadow (Clarendon Press), or (β) Boswell, Gray, Sonnets (Milton and Wordsworth), Charles Lamb, in "Select English Classics," edited by A. Quiller-Couch (Clarendon Press); (vi) either (α) Kingsley, "Westward Ho!" or (β) Hakluyt, "Voyages of Elizabethan Seamen" (Hawkins, Frobisher, and Drake) (Clarendon Press).

Geography.—(i) Principles, (ii) British Isles, (iii) a special region, viz., *one* of the following: (α) the Mediterranean region, (β) the Monsoon region of Asia, (γ) the Atlantic region of North America. (The basin of the Mississippi is not included in (γ).)

Latin.—Caesar, De Bello Gallico I.; Virgil, Aeneid IX.; Ovid, Selections by G. G. Ramsay, ed. iii., Nos. 12, 17, 36–40 (Clarendon Press).

Greek.—Scenes from Sophocles, Ajax (Clarendon Press); Plutarch, Julius Caesar (Clarendon Press).

French.—Either Mérimée, "Colomba," or Balzac, "Le Colonel Chabert" (Clarendon Press).

German.—Riehl, "Seines Vaters Sohn" and "Gespensterkampf" (Clarendon Press).

Senior, March and July.

Religious Knowledge.—(*a*) Ezra, Nehemiah, Haggai, (*b*) St. Luke, (*c*) Acts, i.–xv., (*d*) Acts, i.–xv. in Greek, (*e*) Galatians and St. James, (*f*) Prayer Book. The Paper on (*d*) will include questions on the subject-matter of Acts i.–xv.

Ancient History.—The Outlines of Roman History from 509 to 242 B.C., with special questions on the First Punic War.

English History.—Either (α) from 55 B.C. to 1135 A.D., or (β) from 1042 to 1485, or (γ) from 1399 to 1603, or (δ) from 1603 to 1763, or (ε) from 1763 to 1880, or (ζ) the Outlines of English Political History from the Anglo-Saxon Conquest to 1837.

General History.—Either (α) from 1066 to 1516, or (β) from 1500 to 1715.

Foreign History.—Outlines of General European History from 1815 to 1876.

English Literature.—(i) Either (α) Tennyson, "The Coming of Arthur," "The Marriage of Geraint," "Geraint and Enid," "The Holy Grail," or (β) Shakespeare, "Merchant of Venice"; (ii) Shakespeare, "Midsummer Night's Dream," "As You Like It," "Tempest"; (iii) either (α) Shakespeare, "Julius Caesar," or (β) Shakespeare, "Richard II.," or (γ) Scott, "Marmion," or (δ) Scott, "Rob Roy"; (iv) either (α) Milton, "Comus," "L'Allegro," "Il Penseroso," "Sonnets," or (β) Wordsworth, Selections by Matthew Arnold (omitting Reflective and Elegiac Poems) (Macmillan), or (γ) Essays on Addison by Macaulay and Thackeray, &c., selected by G. E. Hadow (Clarendon Press); (v) "The Oxford Treasury of English Literature," vol. i., by G. E. and W. H. Hadow (Clarendon Press); (vi) Hakluyt, "Voyages of Elizabethan Seamen" (Hawkins, Frobisher, Drake) (Clarendon Press).

Geography.—(i) Principles, (ii) British Empire, (iii) a special region, viz., *one* of the following: (α) Europe, (β) Asia, (γ) North America (including the West Indies).

Latin.—Either (α) additional unprepared translation, or (β) Virgil, Aeneid IX., X., or (γ) Caesar, De Bello Gallico I., II., or (δ) Cicero, pro lege Manilia (or a combination of two of these authors).

Greek.—Either (α) additional unprepared translation, or (β) Euripides, Alcestis, or (γ) Xenophon, Anabasis I., II. (or a combination of (β) and (γ)).

THE NATIONAL UNION OF TEACHERS.

THE annual conference of the National Union of Teachers was held this year at Plymouth. A few of the papers are described below, but the facts that this conference forms one of the great educational meetings of the year, and focusses much that is best in connection with educational thought in England, are testimony of the esteem in which members of the teaching profession are coming to be held by the general public. For this result the N.U.T. is very largely responsible; and we are impressed by the vast amount of quiet support the union gives, and has been giving for more than thirty years, to teachers of all grades, as well as by its spade-work in ameliorating the conditions of the service of teachers. We hope that the thousands who give their time to the work of this union will persevere and reap a great reward in the future, when they can point to this country as having an educational system which fits the English child thoroughly for his life's work.

At the conference Mr. Marshall Jackman, the president, in his address, dealt with the need for more imperial aid for elementary education. He said the most important question in connection with education at the present time is the financial straits in which many local education authorities find themselves. The Civil Service Estimates of the Board of Education have been published. The study of them must have caused all well-wishers of elementary education much disappointment. They contain no relief for the local education authorities. This omission compels the union to continue its agitation. Commenting on Mr. Runciman's Circular 709, introduced last year, which has been incorporated into the Code, Mr. Jackman said no Education Minister since the time of Mr. Foster has done more to promote educational progress for the workers' children than Mr. Runciman by his reform in the direction of securing smaller classes and more efficient teachers. But all these things require money, and in many districts the breaking point has been almost reached. Since Mr. Birrell introduced his Bill in 1906 there have been promises of further financial aid to local authorities from time to time. Mr. McKenna in the House of Commons, and the Earl of Crewe in the House of Lords in 1908, both definitely and distinctly promised that there should be an additional grant in aid of medical inspection, and the white paper signed by Sir Robert Morant foreshadowed considerable increases in State aid for elementary education. Some relief, he continued, is absolutely necessary if the education of the working-classes of this country is to be carried on efficiently. While this aid is being kept back, generations of British boys and girls are passing out of the schools from large classes, taught by unqualified teachers under unhealthy conditions. What is denied to these children on account of political exigencies is denied to them for all time. It may be possible to gather in unpaid income tax or overdue beer duties or uncollected death dues, but we can never give back to these little ones the rights and privileges they are to-day prevented from enjoying. Can we not have a truce so far as the children are concerned?

In concluding an able address, Mr. Jackman said: "We build Dreadnoughts regardless of the cost. No one loves Dreadnoughts. No one thinks them desirable *per se*. We build them because other nations are building. We must keep pace with our neighbours. The cry is that the 'Two-Power Standard' must be maintained. It is irresistible. Would that we could get the same enthusiasm for an educational standard! If we could only secure the shouts of the populace for a 'Two-Power Standard' of education! Many of our schools are starved and neglected, yet we can get up no education scare. Shall we endeavour to set a national educational standard worthy of this great Empire? Is it too much to ask that the educational opportunities for British boys and girls shall be no less than those for the children of any other nation? For example, all forms of education shall be as free to the British youth as to an American youth; the elementary schools of Britain shall be manned by teachers no less trained than those in the schools of Sweden; the classes of these schools shall be no larger than those of Denmark; the health of the children in our schools shall not be less cared for than that of children in German schools. This year we have voted £5,000,000 additional money for the Navy without a twinge. Surely we can spare one-tenth of this sum for the purpose of building up the foundation of our Empire—the intelligence of our scholars."

The important question of continuation schools was the subject of a paper—"Betwixt School and Citizenship"—read by Sir Henry Hibbert at the conference. In several reports the present unsatisfactory condition of things has been condemned. Both the Majority and Minority Reports of the Royal Commission on the Poor Laws, and also the report of the Consultative Committee on Attendance at Evening Schools, discuss the problem. There are in this country more than two and a half millions of children between the ages of thirteen and eighteen years who have left the public elementary day schools, and it is estimated that three-quarters of this number are under no educational care or supervision—at any rate on weekdays. Sir Henry Hibbert pointed out that it is obvious, therefore, that the duty of every educational authority is to provide in the fullest possible manner for further discipline and training, both mental and physical, for all children. It is a duty which is receiving attention in many countries, all of which seem to be moving towards three conclusions, viz.: (i) that increased effort should be made by the State to compel local authorities to organise, according to the needs of different localities and of different trades, courses of instruction useful to any child, and so planned as to train them for healthy living and for the duties of citizenship; (ii) that there should be a further delimitation of the hours of juvenile labour; and (iii) that all employers—Government as well as private—should be compelled by law to enable any persons of less than seventeen or eighteen years of age employed by them to attend courses of instruction—general or technical—for a specified number of hours per week, at times during which the pupils would not be too tired to profit by the instruction. The principles involved in these conclusions are not new, for, as it has been well expressed, "They simply propose a further application of principles already recognised in our social policy as regards national education, parental duty, and employment." This duty can be most efficiently carried out by the establishment of continuation schools, which should provide further instruction—mental and physical—for those who have left the elementary day schools and have entered upon the practical work of life.

STATE AND LOCAL CARE OF ADOLESCENTS.[1]

By NETTIE ADLER,
Member of the London County Council.

THERE is no fact of greater interest to the student of social economics than the growth of the sense of communal responsibility, not only in relation to the children, but also to the young people of the State. Whilst the past century has been the battle-ground on which has been waged and won the fight for childhood, recent legislative and administrative reform aims at grappling with those problems which affect the difficult years of adolescence. That such reform was needed may be gathered from the reports of many important official and private investigations which have been made during the past decade into aspects of our industrial life.

Two main causes seem to have prevented closer co-operation between school and entry into industrial life. In the first place, social and legislative effort during the last century was actively engaged in combating the grosser forms of industrial exploitation of children and young persons. The limitation of overtime, the prevention of night work (except in certain specified instances), the prevention of employment in dangerous trades and processes, the development of a system of medical certification, occupied the attention of Government departments and social reformers during the whole of the nineteenth century, and culminated in the Factory and Workshop Act of 1901. Again, reclamation and reform applied to youthful offenders engaged a large and increasing amount of activity, with the result that the lad or girl rescued from criminal or vicious surroundings, or checked on the verge of a criminal career, receives that training for and help in the choice of a career which, had it been forthcoming at an earlier stage, might have proved even more efficacious and certainly more economical. Now, however, we are beginning to realise the truth of the old adage that "Prevention is better than cure," and to accept the fact that, in order to ensure good and efficient citizenship, State aid, local control, and voluntary effort, which are always at the disposal of the youthful offender, are just as much needed to shield the boy or girl of respectable antecedents when they leave school for work. In poor neighbourhoods, school has become the place of refuge from the hardships of home. Physical comfort through school meals, physical amelioration through school doctors and nurses, and means of recreation, are all found now within the school gates. And these valued aids to the well-being of the child are available in addition to the care and sympathy of the teachers, which in long years of over-pressure and difficulty has never failed. Yet the crown to their efforts has been wanting, for just at the moment when wise and sustained guidance could be most usefully employed, the "hand of compulsion and organisation" has been lifted from the shoulder of the liberated scholar, and he has been left alone to shift for himself, to drift into the first job that presents itself, irrespective of the fact that it would not lead to permanent employment. Intelligence and aptitude fostered during the school career have become dulled and deadened by mechanical and uninteresting occupations. A long day's work of ten hours or more has left the undeveloped worker too much overtaxed to care for sustained effort of real value in the evening.

There have been hitherto two main difficulties in the way of placing boys and girls in employment which will

[1] From a paper read at a sectional meeting of the Conference of the National Union of Teachers held at Plymouth on March 30th, 1910.

ensure an adequate future livelihood. First, *the existence of a large number of unskilled occupations which absorb the energies of children before being released from school attendance.*

The second difficulty *is the lack of training given in workshop or factory*, even if the worst type of employment is eschewed. Apprenticeship has died, or is dying out, in a variety of trades. Where it still flourishes it needs to be supplemented by technical classes.

It is almost a truism to assert that once the diagnosis is established the disease is more than half cured, but now that there is a consensus of opinion on the importance of legislative action to deal with the problem of adolescent labour, and a general acceptance of certain root causes of unemployment, we are certainly nearer to the provision of remedies than we have ever been before. That additional care by the State for the adolescent is necessary is agreed to by the signatories of both the Majority and Minority Reports of the Poor Law Commission, though the proposals formulated are not identical. Both reports recommend that the age of school exemption shall be raised to fifteen years.

A step forward in this direction is contained in the summary of conclusions contained in the Report of the Consultative Committee of the Board of Education on Attendance, Compulsory or otherwise, at Continuation Schools. Although the committee considers that a compulsory system of continued education will ultimately be advantageous, its proposals follow the course of the new Scotch Education Act in rendering it incumbent on every local education authority to make suitable provision for continuation classes, but the committee does not recommend that such attendance should be compulsory, preferring that it should only be compulsory when bye-laws are made. It is further suggested that the education authority should keep a register of all young people within its district and a record of their employment, and should prescribe the periods of time and hours when they should attend the continuation classes. Scant reference, however, is made in the pages of these reports to the system of trade schools established by the London County Council, which may now be said to have evolved from the experimental stage and to have become an important section in London's technical education. No doubt the fact that the system is of recent growth is the main reason why it has received less attention than it deserves. The development of handicraft side by side with the general intelligence is the primary aim of the trade school, and when this is possible on practical lines postponement of entry into the workshop is a distinct advantage, more especially when the trade side of the work is to some extent supervised by members engaged in the industry taught in the school. Future developments of the day trade school, so far as boys are concerned, are likely to be found in arrangements by which boys entering a specific trade are at the same time indentured to a workshop, with the provision that two or three years of the training are given in the "whole-time" trade school and the remainder of the period in the workshop, with time off for continuation classes. This plan would obviate the objection sometimes raised by members of trade unions that the day trade school would tend to flood industries with semi-trained workers. The present method, by which lads enter industries without supervision of any kind, is, of course, a much more dangerous contingency.

It is, however, in the London trade schools for girls that the advantage of whole-time rather than half-time teaching is most apparent, due to the fact that a shorter training is needed for women's than for men's trades. The two years' course enables girls to cover apprenticeship and even improvership, and to enter the workshop as young assistants at wages ranging from 10*s.* to 16*s.* weekly. Girls are received into the schools at an age not earlier than fourteen years. They are then not too young to specialise, and during the two years twenty hours of each week is devoted to trade teaching and about ten hours to subjects of general education. The trade teachers are all experts who have been heads of workrooms, and they are chosen with the co-operation of employers, foremen, and forewomen. Each trade has the benefit of the advice of this consultative committee, which meets periodically to criticise the work of each class, and to make suggestions. They also give invaluable help in placing out the girls after the period of training.

While it would be a great advantage if the provision of trade schools could be accelerated, the cost—from £7 to £10 per head per annum—is high, but not higher than that for scholars in secondary schools. It is much to be desired that the Board of Education's grant of £3 per head should be increased, so that local authorities might be more willing to promote this form of training.

SOME NEW WALL MAPS.

(i) *The World, Political—Projection, Mercator.* 72 in. × 48 in. (Philip.) 14*s.*

(ii) *Pacific Ocean, Atlantic Ocean, Indian Ocean, Bathy-orographical—Projection, Mollweide.* Each 50 in. × 42 in. (W. and A. K. Johnston.) 12*s.* each.

(iii) *The British Isles—Orographical.* 50 in. × 58 in. (Stanford.) In sheets, 16*s.*; mounted on rollers and varnished, 20*s.*

MESSRS. PHILIP act up to their reputation in the latest addition (i) to that excellent series, the "Comparative" maps, which we have often had occasion to praise in these columns. Like its predecessors, the new map of the world is clearly coloured and beautifully clear. The deep red of the British Empire is naturally very prominent, and nowhere more so than in that division of it which is making history at the present time—British South Africa. Canada, India, Australia have now been "unified" for some time; such a map as this emphasises the justice of the South African claim. Other features of the map are the indication of the world's great towns by different markings, and the tracing of the great land and water trade routes in black and red respectively. The all-British cable is also shown, and a most useful scale for the degrees of latitude is inserted. This latter is very instructive, and serves to correct exaggerated notions of, say, the size of the Russian Empire or Canada in comparison with other parts of the globe. The only drawback we notice is that the purple tint used for Persia, Japan, and Korea can barely be distinguished from that which does duty for France and her colonies. This is unfortunate, for on a map of the world France is the country one naturally selects for comparison with the United Kingdom as a colonising Power.

Messrs. W. and A. K. Johnston add three new maps (ii) to their bathy-orographical series. Although each is labelled with the name of a great ocean, the result is really a tripartite division of the whole world, land as well as water. The contour colouring is the familiar green, brown, and blue, and the general result is most satisfactory from every point of view. The equal-area projection is an excellent corrective to the Mercator; and those teachers who use the political "Mercators" are well advised if they display alongside, or keep within easy

reach for reference at the same time, one of these "Mollweides."

Mr. Edward Stanford publishes a physical map of the British Isles (iii) as one of his sets of physical maps compiled under the able direction of Mr. Mackinder, and with it, as usual, provides a most helpful broadsheet of explanatory matter, which is in itself an epitome of British orographical geography. We cannot forbear quoting § 18 by way of example: "The rivers which flow through the English Plain carry less water to the sea than do those which come down from the Highlands of Scotland. The Thames, for instance, has a smaller volume than the River Tay. The value of the Thames lies in the fact that it flows through a plain, and that it has been easy to make it navigable by locks. Apart, however, from this, the Thames would be little more than a brook in summer, although swollen with flood in autumn and winter. Its world-wide fame comes from the fact that the oceanic tide ascends through the estuary past London to the town of Richmond. The Thames of London is, in fact, a tidal creek. The rise and fall of the water at London Bridge amounts to as much as 20 feet." From which it may be inferred that the map is worth getting if only for the sake of the broadsheet. In addition to giving the rivers the prominence they deserve, the map also contours the land in varying tints of brown and the sea in blues, and it specially emphasises a host of other points, such as the continental shelf upon which the islands stand, and the Highland areas and their gaps, which have developed into great trade routes. One defect we think it has: there are too many names. True, they are well selected, and are printed in a neutral *grey* tint, and are therefore not so conspicuous as otherwise they might be; but, all the same, the map would be more effective as it would indubitably be the clearer with less of them.

HISTORY AND CURRENT EVENTS.

We refer elsewhere to the pageants which are to be presented this summer in London and Chester, and we have seen advertisements of the former on many a hoarding. It is noteworthy that one of the incidents chosen for this purpose is the Fire of London. If we may be guided by the placards which often disfigure our streets, Englishmen nowadays, in the opinion of those who cater for their amusement and instruction, are particularly fond of horrors. Of late years we have had representations of earthquakes, deluges, and calamities of other kinds, and our newspapers apparently find nothing so attractive as "horrible murders" or "tremendous fires." Perhaps there is nothing new in this. In Elizabeth's days bear-baiting was a Court entertainment, and the Puritans in their days of power were supposed to care more to stop amusement than to pity the bears. Prize-fighting between both men and cocks was the popular amusement of the eighteenth century, and though we now discourage the enacting of horrors, we do not hesitate to represent them.

The Pageant of London is but part of a "Festival of Empire," a fact which probably accounts for the varied nature of the scenes to be presented. Is it not a strange thing that, at least in the opinion of many, and they are probably right, our people need instruction, and much of it, in the mere fact of the existence of the British Empire? Was it necessary, we wonder, to tell Athenians of their empire, that which was overthrown in the Peloponnesian War? Were the citizens of Rome not aware of the extent of their empire when it encircled the Mediterranean and gave peace to "the world"? The subjects of Philip II. were surely not ignorant of the empire on which "the sun never sat," and which consisted in 1588 of all that Spaniards and Portuguese had conquered in the sixteenth century. Is it the extent of our Empire that baffles the understanding, or the comparatively quiet way in which it has grown?

Our readers are doubtless following in their daily papers the debates and resolutions of the House of Commons concerning what is intended to be the future relations between the two Houses of Parliament, because they are, in the most literal and original meaning of the word, interesting to us all. The newspapers are calling the process by the words "reform" or "revolution," according to their opinion of the proposals. How English people still abhor "revolution"! The word never seems to have a good meaning. This arises probably from the fact, so notorious in our history, that those who have advocated change have always believed that they were in reality returning to a "golden age" of some kind in the past, that they were, in fact, the true conservatives, preserving or restoring "what was originally our constitution." So it was in Stuart-Puritan times. So was "the glorious revolution" of 1688–9. So was the "Reform Bill" of 1832; and there are not wanting among us those who say that the House of Commons is but claiming its own.

Other aspects of the question present themselves to the minds of political students. This change will be carried out, if at all, by the ordinary machinery of legislation. We have no written constitution, and it is in the power of our omnipotent Parliament to "unlaw" to-morrow what it makes law to-day, as Oliver Cromwell observed. Our cousins of the United States of America can refer to a written document when any question arises as to conformity or non-conformity with the constitution.

ITEMS OF INTEREST

GENERAL.

The summer meeting of the Association of Assistant-mistresses in Public Secondary Schools will be held at Cardiff on June 4th.

The Incorporated Association of Assistant-masters will hold a general meeting at the High School, Nottingham, on Saturday, May 21st, commencing at 2.30 p.m. The agenda includes the following: (i) An address by the chairman, Mr. F. Charles (Strand School), on "The Conditions of Service of Secondary Teachers in England as compared with those in Foreign Countries." This address will be based on the important report on the subject which has lately been prepared and issued by a special committee of the association. (ii) A paper by Mr. E. W. Small, director of education to the Derbyshire County Council, on "Some Administrative Problems connected with Secondary Schools." (iii) A paper by Dr. G. S. Turpin, headmaster of Nottingham High School, on "Myopia in Education." Each of the papers will be followed by a discussion.

The National Home-Reading Union will celebrate its "coming of age" by an out-door *fête* in the Botanical Gardens, Regent's Park, N.W., on Saturday, June 18th, instead of Saturday, June 25th, as previously announced. The *fête* is intended for children, and the gardens will be thrown open at 2 p.m. There will probably be a fancy dress march past. The celebration will continue during the

succeeding week, and on June 23rd, at 4 p.m., a public meeting will be held in the Mansion House, at which H.R.H. Princess Louise and his Grace the Lord Archbishop of Canterbury will be present.

THE Lancashire County Education Committee has found that the experiment of making a grant of £10 to selected secondary-school teachers of modern languages for attending an approved course on the Continent has been entirely successful, and intends to repeat the experiment this year. Perhaps the Lancashire County Committee will consider the desirability of extending facilities of a somewhat similar nature to teachers of other subjects. Many teachers would appreciate facilities for improving their professional equipment.

THE London County Council continues its annual offer of grants to teachers for foreign holiday courses. This year not more than sixty grants, each of the value of £10, are to be awarded to teachers in London schools on the nomination of the headmaster or headmistress. Nomination is limited to teachers who are engaged in "responsible work as teachers of the subject to which the course is confined," and is to be given in order to "improve the efficiency of the teaching in the schools." We wonder how long it will be before the L.C.C. and other governing bodies recognise the right of teachers of other subjects than modern languages for facilities for study abroad. A similar sum would provide substitutes for nine teachers who might be granted a term's leave of absence with pay so that they may improve their efficiency as teachers.

MR. S. E. WINBOLT, of Christ's Hospital, contributes to the *Times* of April 5th an interesting article on "Grace Terms," that is, free terms occasionally granted to teachers for the purposes of self-improvement at home or abroad. In these days of struggle for a respectable remuneration and tenure it may seem at first sight a little premature to press for such privileges as Mr. Winbolt seems to have been instrumental in securing for his own school. It must be remembered, however, that if secondary-school masters wait to ask for their relishes until they have secured their bread, they are likely to wait long enough for them. Moreover, there are many schools in the position to pay for so justifiable a relaxation, and they should lose no time in joining the few which have set so good an example.

THE chief value of Mr. Winbolt's article is that it collects clear and hard precedents for the use of those who may be inclined to press for the privilege. The main conditions fixed in the new Christ's Hospital scheme are: (i) that a master receives his full cash salary during absence; (ii) his substitute is paid by the school; (iii) he takes his holiday for some purpose conducive to his extended usefulness in the performance of his duties for the school; and (iv), as a rule, he cannot ask for a "grace term" until after ten years' service. With such precedents, and with the backing of the Board of Education, we may expect before long to find other large schools imitating our enterprising neighbours, France and Germany.

THE *Times* for April 8th gives particulars of the travelling arrangements which will enable educated men and, by means of scholarships, undergraduates "to acquire accurate knowledge at first hand of the life, needs, progress, and potentialities of the Dominions beyond the seas and of the United States." These arrangements are the work of the Central Bureau for the International Interchange of Students, which has just been opened at Caxton House, Westminster. Lord Strathcona is the president of the bureau, and Mr. Henry W. Crees is the hon. secretary.

IN the House of Commons recently Mr. Ramsay Macdonald asked the President of the Board of Education whether the practice adopted in Scotland, and set forth in the memorandum entitled "The Cleansing and Disinfecting of Schools," was enforced in England, and, if not, if he would explain why such precautions should not be observed. Mr. Runciman replied that the Board had not hitherto put forward any specific recommendations as to the methods of cleansing and disinfecting, but he promised to consult with the President of the Local Government Board to see if they could act together with a view to the issue to the local authorities in England of recommendations similar to those contained in the memorandum of the Scotch Education Department.

THIS, of course, is a matter which more particularly affects elementary schools, but, at the same time, it is one to which the medical authorities of secondary schools may well devote attention. The problem of the prevention of infectious disease is, in varying degree, common to all schools, as is the need for the observance of every possible precaution to guard against it. At some of the great public schools, at Eton, Winchester, Rugby, and Haileybury, to name but four, disinfection is systematically carried out, and to these must be added a host of smaller schools. Where there is any considerable number of day-boys in attendance the practice gains an additional value, for it must be obvious that in such schools the risk of the introduction of infection from without is very much greater than in schools composed wholly or mainly of boarders, who, in the event of an epidemic in the neighbourhood, can be kept out of the way of direct infection. But in any case the regular disinfection of the floors of school premises is so simple and obvious a precaution against the dissemination of infection that it is somewhat surprising that it is not more generally carried out. The attention directed to the subject by the likelihood of reform in the near future in the present system of cleansing and disinfecting elementary schools may perhaps lead to consideration on the part of secondary-school authorities as to how far in this particular it may be desirable for them to adopt similar measures.

HISTORICAL pageants are still flourishing among us, and we have received the programmes of those to be held at the Crystal Palace, near London, and at Chester this summer. The former is to be a Pageant of London, and is to be performed frequently during the months of May, June, and July. There are to be twenty-four scenes, ranging from "the Dawn of History," with the mythical King Lud, to the present year, when the Overseas Dominions will be represented as gathering round the Mother Country. Two will be chosen from the Roman Period, two to represent the Danish Invasion and the Norman Conquest, and the subjects of the others range through the Middle Ages, the period of the New Discoveries in America, the age of Elizabeth, and the beginnings of Empire in India and America. There are also to be scenes representing the schools of London and the rise of the English theatre, the Fire of London and the events of the year 1759, the discovery of Australia, and the end of the war against Napoleon. The Chester Pageant is more modest in its programme. The episodes to be presented in that city—itself a pageant with its "rows," its walls, and its cathedral—are chosen from Roman, early English, mediæval, and Stuart times, but there will be nothing more modern than the seventeenth century. The dates of performance are confined to the

one week which ends on July 23rd. Each will have its attractive features, and those who are fortunate enough to visit both will doubtless have a full return for their trouble.

THE Board of Education has informed the Joint Matriculation Board of the Universities of Manchester, Liverpool, Leeds, and Sheffield that the possession of a senior school certificate will be accepted as qualifying for admission of students to a training college as two-year students or as three-year students, provided that the choice of subjects in which the student is successful is such as the Board approves.

THE President of the Board of Education has appointed Mr. F. G. Ogilvie, C.B., principal assistant secretary of the technological branch of the Board, to a new post of Secretary of the Board for the Science Museum, Geological Museum and Geological Survey. Mr. E. K. Chambers has been appointed to succeed Mr. Ogilvie in the vacated post. Dr. H. F. Heath, director of special inquiries and reports, has been appointed to the post of principal assistant secretary of the universities branch of the Board in combination with his present post.

THE President of the Board of Education has appointed a departmental committee to consider and report upon various questions in regard to the present condition and the future development of the valuable collections comprised in the Board's Science Museum at South Kensington and Geological Museum in Jermyn Street. In particular, the committee is asked to advise him (*a*) as to the precise educational and other purposes which the collections can best serve in the national interests; (*b*) as to the lines on which the collections should be arranged and developed, and possibly modified, so as more effectively to fulfil these purposes; and (*c*) as to the special characteristics which should be possessed by the new buildings which it is hoped will shortly be erected on the South Kensington site to house these collections, so as to enable the latter to be classified and exhibited in the manner most fitted to accomplish the purposes they are intended to fulfil. A departmental committee has also been appointed to consider and report upon the functions and constitution of the Royal College of Art and its relations to the schools of art in London and throughout the country.

THE aim of technical education was stated by Mr. H. S. Myers, in a paper read at a recent meeting of the West Yorkshire branch of the Association of Teachers in Technical Institutions, to be (i) to train the mind to deal systematically with any question or problem that may arise; (ii) to search for the main points at issue; (iii) to train the imagination; (iv) to impart the power of observation; and (v) to impart ideas of accuracy and definiteness of expression. On the other hand, said Mr. Myers, a classical education generally imparts to the student polish, culture, diplomacy; and every student who aims at rising to a high position in his profession, and taking the stand in society that his profession demands of him, should endeavour to obtain a broader culture than a purely utilitarian training can give.

Education for April 8th contains a paper on "The Movement towards a National System of Technical Education," read by Dr. Robert Pohl before the Association of Teachers in Technical Institutions (West Yorks Branch) at Leeds on April 2nd. Dr. Pohl pleads for a "thoroughly organised system of technical education, leading up from the primary and secondary schools to the technical school and having, as its crown, the technical university," which shall be national, and controlled by the Board of Education. Mr. Charles Stewart, principal of the Technical College, Aberdeen, contributes an article on "Technical Education: the Need of a National Policy," to the *Educational News* for April 8th, and his views tend in the same direction as those of Dr. Pohl.

SURELY more dignified methods of raising the necessary funds for Captain Scott's Antarctic Expedition than those in vogue are possible! Whatever may be said of the desire to arouse the interest of young people in polar exploration, it reflects little credit upon the British public that pupils should be asked to raise funds to provide part of the equipment, which is to be labelled with the name of the school. These methods are a curious sequel to the enthusiasm aroused by the work of Sir Ernest Shackleton.

MESSRS. W. AND G. FOYLE, of Charing Cross Road, have sent us a very convenient "Selected List of Educational Books," classified according to subjects. The list deals chiefly with books for Civil Service, teachers' and university examinations. We notice that almost any educational book can be obtained from this firm second-hand at half price.

THE eighth annual issue of the "Schoolmasters Yearbook and Directory," that for 1910 (The Year Book Press, c/o Messrs. Swan Sonnenschein and Co., Ltd.), is now available, and proves on examination to be more useful even than the last edition, and that is giving it very high praise. Important alterations in the section dealing with county and borough education authorities have been introduced, financial statistics have been dealt with separately, and the names of many women teachers have been included in the directory. We notice with much regret that the editor has to refer to financial difficulties, and says these would be removed by an annual purchase of the "Yearbook" by each and every school represented in its pages, and by a biennial purchase by every teacher mentioned in the directory. We hope his appeal will not prove in vain, for, speaking for ourselves, we refer so often to the "Yearbook" that we should be lost without it. It is an invaluable work of reference to every teacher and other educational worker.

HEADS of schools and others are frequently at a loss with regard to the pictures which are suitable for both decorative and educational purposes, and are at the same time sufficiently well produced and sufficiently cheap for school use. For this purpose we can recommend to their notice the Pictures for Schools published by Mr. Franz Hanfstaengl, of which a catalogue has been received. The illustrations there given are arranged in sections, and it will suffice to note one or two of these. In the geographical section there are pictures illustrating technical terms, such as Rieger's "Ravine with Torrent," and also pictures of typical scenes, such as Stuart's "Their Mountain Home," which shows a typical Highland scene in Scotland. In the botanical section occurs Fahrbach's "Firwood in the Black Forest"; in the section on Bible illustrations is found Defregger's "Adoration of the Shepherds"; while there are scenes from history and many historical portraits. Among the literary pictures we notice Crane's "Canterbury Pilgrims" and "The Play Scene in Hamlet" by Maclise.

PROF. J. J. FINDLAY addressed the members of the College of Preceptors on March 16th on "Demonstration Schools: their Purpose, Method, Results." The main topics of which he treated are contained in the *Educational Times* for April, from which we extract the following

paragraph: "There are, of course, hostile critics who would be glad to describe such a school as a kind of vivisection institute where children are subject to perpetual experiment; but such critics would soon alter their mind if they ceased to theorise on matters which they are too indolent to investigate. I have no great desire to see experiment replace demonstration. In a sense, all good schools are experimental, but it is doubtful whether many improvements in teaching can be adequately tested on the strict lines of controlled experiments; and it is certain that no school ought to be established for the express purpose of making such experiments. True, from the standpoint of demonstration, a school can serve a department of education as a laboratory serves a department of physics; but children are not so pliable as glass or iron, and educational experiments must follow a method adapted to the status of the child at school. Nevertheless, while experiment, in the laboratory sense, has not, so far, been systematised, it would not be right to ignore the service that such schools ought to render in the promotion of research. On the contrary, there is evidence enough that they are already contributing materially to the advancement of knowledge, and will contribute much more when they are adequately equipped to discharge their function."

SCOTTISH.

EDINBURGH SCHOOL BOARD has given a lead to the rest of Scotland by its endeavours to popularise its continuation classes. Employers have been visited and urged to use their influence to get their employees to attend the classes; meetings of employees have been held at which members and officials of the Board have urged upon the younger members the necessity of continuing their education; special leaflets have been prepared giving full particulars of the facilities provided for the various classes of workers, and these have been distributed widespread over the city. Finally, in order to show how practical the work in these classes really is, and how closely connected it is with the daily work of the citizens, an exhibition of work done during the session was held in the Synod Hall, the largest building in the city. The amount, the variety, and the excellence of the exhibits were a revelation to all who saw them. In order to dissipate the idea that the articles exhibited were got up merely for show, certain classes were shown actually at work, and the public were allowed to see the products of their labours at all stages.

LORD PENTLAND, Secretary for Scotland, was to have opened the exhibition, but was prevented by official duties. In a letter apologising for his absence, he paid a well-deserved compliment to the Edinburgh School Board for the splendid example it had given to the rest of the country, and said that a debt of gratitude is due to the Board, to its staff, and to all who have joined with them in helping and commending this branch of educational work. Since the passing of the Act of 1908 a notable advance has been made in the number of centres for continuation classes. In 1908–9 the number of centres was 755, as against 1,069 for the present session. In certain rural districts it has been found that every person between the ages of fourteen and seventeen is in attendance at continuation classes without any resort to the compulsory powers of the Act. If anything approaching this state of matters could be achieved all over the country, the compulsory provisions might be allowed to become a dead letter. It is probable, however, that some measure of formal compulsion will eventually become necessary in the large towns. In conclusion, Lord Pentland urged the establishment of educational information and employment bureaux.

FOR several years no new features have appeared in the annual education code. This year, however, several important modifications are announced, and others are foreshadowed. On the very first page it is stated that the Department is considering the advisability of further restricting the number of pupils for whom a teacher may be held responsible. There will probably be an outcry in reactionary circles against this long overdue reform. School Boards, indeed, are already taking steps to oppose the change unless the Department is prepared to bear part of the additional cost entailed. It is very satisfactory, however, to find that all the large Boards are in favour of the reform in principle, and it seems to be only a question of who is "to pay the piper." For the first time the code adopts the nomenclature for schools laid down in the regulations for the training of teachers. Three classes of schools are to be recognised, primary, intermediate, and secondary. The classification into higher grade and higher class is to be abolished. After this announcement at the beginning of the new code, it is rather anomalous to find reference to "higher grade" schools still appearing in several articles. Teachers in secondary and intermediate schools should note that no attendances may be reckoned for grants in the case of pupils who make less than 80 per cent. of the possible attendances from the date of their enrolment. The regulation governing the size of classes in such schools has also been made more stringent. Formerly, a teacher had to be provided for every thirty or fewer pupils on the roll, thus allowing the small numbers in the higher classes to be compensated by larger numbers in the lower. In future it is definitely laid down that *no* class should exceed thirty in number save with the express sanction of the Department. This will mean a considerable addition to the staff of the larger schools.

THE council of the Secondary Education Association has been considering for some time what should be the character of the university preliminary examinations, and has arrived at the following conclusions: (i) that the universities should accept as qualifying for entrance every form of group leaving certificate of the Education Department, provided the main subjects are subjects of university study; (ii) that the preliminary examination for those who have not leaving certificates should admit of a wide choice of subjects, and should be on a standard equivalent to that of the leaving certificates; (iii) that the preliminary examinations should be controlled by one governing body for Scotland, and that secondary teachers should have representation thereon; (iv) that, after passing the preliminary examination or its equivalent, the student should be allowed to attend any class qualifying for graduation.

AT a special general meeting of the Scottish School Boards Association, Dr. Harper, Alloa, moved that economics should be given a place in the curriculum of all secondary and continuation schools. He did so chiefly on the ground that social life demands more than ever some knowledge of the subject. The previous question, however, was carried by a large majority. The chief argument that weighed with the members was the overcrowded character of the present curriculum. Considerable over-pressure, it was held, already exists in the schools, and to add another subject would result, in many instances, in physical and mental breakdowns. A motion was carried urging the setting up of labour bureaux to facilitate the placing of boys and girls in suitable employments on leaving school.

The papers set at the leaving certificate examination this year maintain the high standard of excellence that has characterised them for some years past. In almost every subject the mental capacity of the pupils for whom the papers were intended has been fairly gauged, and the questions set were drawn up on the soundest educational principles, demanding not only knowledge, but intelligence at every stage. The paper in higher English must be excluded from this favourable criticism. Merely to read the paper would take some fifteen minutes, and to answer it would tax the powers of university dons. The examiner has apparently been more desirous of producing a brand-new style of examination questions than of testing the knowledge of the pupils. The whole paper is a piece of pretentious folly.

IRISH.

Trinity College, Dublin, has issued the following new graduation regulations, which were passed by the Board on March 12th: (i) That no students or graduates of any other university (excluding Oxford or Cambridge) should be allowed to take the B.A. degree unless they have kept at least two academic years at Trinity College, Dublin. (ii) That no student should be allowed to take any of the degrees in medicine, surgery, and midwifery unless he has attended at least three years of the prescribed curriculum in the School of Physic, Trinity College. (iii) That any student who is a Bachelor or Master of Arts of a university recognised by the Board and Council should be allowed credit for the two freshmen years and the final freshman examination, and that such student should be allowed to have his name placed on the college books as a rising Junior Sophister upon payment of the final fee of the senior freshman year. If it should appear that any such student has not studied, as part of the approved courses in the university at which he has graduated, any of the compulsory subjects for the final freshman examination, then the senior lecturer should have power to require such student to pass a qualifying examination in such subjects. (iv) That the following universities should be recognised under the foregoing rule: the Universities of Aberdeen, Birmingham, Edinburgh, Glasgow, Leeds, Liverpool, London, Manchester, St. Andrews, Sheffield, Wales.

A reform scheme for Trinity College has been approved of by a large majority of the fellows, council, and the Board, based on the recommendations of the Robertson Commission, and it is the intention of the College to apply for a King's Letter to carry them out; but this has been blocked for the time being by two of the senior fellows, who propose to take legal proceedings against it.

The National University of Ireland has issued a table of the dates of examinations for the present year, which may be had upon application. There will be two matriculation examinations, viz., on June 28th and September 27th. The first and second university examinations (for pass and honours) will be for intern students on June 7th and for extern students on October 4th, and the B.A. pass similarly on June 7th and September 20th. For the other examinations there are no separate dates for intern and extern students, some being in the spring and some in the autumn. Forms for admission to the examinations may be had on application to the Registrar.

The University is offering for competition in the autumn of the present year a studentship of £100 per annum, tenable for two years, in each of the following subjects: (i) ancient classics; (ii) mathematical science; (iii) mathematical physics and experimental physics; (iv) modern literature; (v) experimental science; and also a similar medical studentship, for which the subjects of examination will be pathology and bacteriology. It also offers for competition among graduates of the University of not more than three years' standing three travelling studentships, each tenable for three years, and of the annual value of £200. The subjects will be: (i) ancient classics; (ii) mathematical science; and (iii) mental and moral science. The examination for the studentships will take place on September 20th.

The question of compulsory Irish in the National University still remains unsettled. It is stated that, as a result of the recent deliberations of the members of the Board of Studies of the new university, an agreement has practically been arrived at to the effect that Irish will not be made a compulsory subject at any of the examinations to be held in 1911 or 1912. The question as to whether any one subject will be made compulsory in the matriculation examination is still unsettled, and the whole matter of the matriculation examination has been referred back by the Board of Studies to the academic councils for reconsideration, but it has been agreed that all students of the new university will be required to attend courses of instruction in the Irish language and in Irish history, whether or not they are subsequently examined in those subjects.

Meanwhile, a new and serious difficulty has arisen in connection with the National University. Strong objections have been raised by Roman Catholics to the attendance of women at the same lectures with men, and combined with this is the demand for the affiliation to the new university of those women's colleges in Dublin which used to prepare women for the examinations of the Royal University. While respecting the views of those who object to mixed university education, it may be pointed out that the proposed affiliation would mean financial loss to University College in the way of lecture fees, and inferior teaching for the women in those colleges, as the professors of University College would not duplicate and triplicate their lectures, and the result would, in fact, be a continuation for women of the evils which the abolition of the Royal University was intended to remove. In the medical school of the Royal, which is being continued under the new university, joint education has always taken place, nor has any other university in the United Kingdom adopted the affiliation policy proposed here, while Trinity College, Dublin, has just decided definitely against the affiliation of Alexandra College, which has long done useful work for the university education of women. Practically all the Protestant women reading for degrees in Alexandra College also attend lectures in Trinity, but the case might prove different with Roman Catholic women and the National University.

WELSH.

Denbighshire County Education Committee took over, as a non-provided school under the Act of 1902, the Brymbo Parochial Elementary School, which had been carried on recently as a private school. The education authority then raised the question whether the parochial school was a Church school, and, if so, whether such religious instruction could be given by teachers employed by the authority. The case was taken to the Court of Chancery. The judge, in giving his decision, said there was no question the school was a Church school. The religious instruction was under the control of the managers, and they were entitled to give directions for such instruc-

tion. He could see no reason for limiting the power to impart the instruction to the clergyman. The teachers could give it. The secular instruction was under the control of the local authority, but the authority was not entitled to interfere with the religious instruction given under the direction of the managers.

THE Carnarvonshire Education Committee is adopting the policy of concentration of scholars in the higher standards at the elementary schools in the populous places in the county. The secretary to the committee, Mr. Evan R. Davies, has recently stated certain facts justifying the policy. For instance, at Llandudno there is a shortage of accommodation in the council schools of 139 places. Instead of multiplying what might be termed "full" schools in the same town, it seemed better to provide a central school for the higher standards taken from each of the present elementary schools. The authority had the power to limit all the existing council schools to the lower standards, and so to require the children from eleven years of age and upwards to attend the new higher standard school; but they could not compel the withdrawal of children from the Church of England schools. Leaving out of account, therefore, the children in the latter schools, there were 302 scholars in Llandudno council schools in Standards V., VI., and VII. who could be drafted into the higher standard school, with the result that every child from eleven years of age up to the time of leaving school would pass through eight or nine grades, instead of only one or two as at present. Moreover, at the higher standard school; but it could not compel the withdrawal for every forty pupils, and it would be possible also to appoint experts or specialists in the different subjects.

MR. WILLIAM GEORGE, brother of the Chancellor of the Exchequer, gave the address at the Machynlleth County School prize-day gathering, and suggested that November 7th next should be a general holiday for the schools to celebrate the attainment of the majority of the Welsh Intermediate Act of 1889. He also suggested about the same time a conference of Welsh educationists to review the past and consider the future. Mr. George considered it would not be too much to say that the county schools of Wales had transformed the face of the country educationally. Courses had been arranged for young men, and the doors had been opened into realms of knowledge which would have remained closed but for the secondary schools. Later in the same speech, however, Mr. George offered considerations which would seem to modify the complacency of the above remarks. He was afraid the boys did not continue their studies after they left school. It was a deplorable thing, but the blame should not be laid too much at the feet of the boys. Could nothing be done to promote a state of things that would help the children, after leaving school, to continue their studies? Speaking generally of education, it did not have sufficient regard to the actualities of the child's life; when the child left school he had a certificate or two in his hands and a collection of ill-assorted facts in his brain, but in his young heart there was anxiety as to his place in the battlefield of life.

THE Merthyr Education Authority has been exercised in mind by the statement receiving currency that the cost of schools in the borough was greater than in the county of Glamorgan. The counter-statement has been announced that the cost per head in the county for twenty-five modern schools has been £16 19*s.* 7*d.*, as against £14 8*s.* 7*d.* in the borough. It needs to be pointed out that the figures either way do not settle the real point. Educationally, it is desirable in any comparison to know which authority has actually provided the buildings with the greatest regard to teaching efficiency and the facilities which make the teacher's task more effective, and provided for the health and progress of pupils most helpfully and stimulatively. Economy can only be estimated relatively to the good of the education given. For instance, smaller classes require more rooms. But more rooms are more expensive. Which of the authorities has considered the increase of educational advantage as more than a balance to outlay of money? That, too, is an aspect of economy not to be judged by merely seeing the figures of expenditure. But of this aspect we ordinarily have no details offered.

THE Welsh committee of the National Union of Teachers, at the conference at Plymouth, made the following report with regard to Welsh training colleges for teachers: Efforts have been made to secure that new training colleges should be in touch with the universities, but the committee regrets that the representations made in the case of Glamorgan and Monmouthshire were without avail, and that these two counties have decided to place their training colleges in localities remote from the influence of university life and culture. The committee is pleased, however, to report that progress has been made in this direction in the case of Bangor, where a working arrangement has been arrived at between the University College and the University.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Exercises on Erckmann-Chatrian's "Waterloo." By A. Wilson-Green. vi+60 pp. (Cambridge University Press.) 1*s.*—This is a companion volume to the Pitt Press edition of "Waterloo." Mr. Wilson-Green supplies a page of exercises to every four pages of text. At the head of each page he gives a proverb or quotation; then comes a short passage for retranslation. The exercises consist of a few questions based on the text, the answers to which require some thought on the part of the pupils; questions dealing with words and phrases, and mainly intended to strengthen the vocabulary; and questions on grammar, in which "book work" bulks rather largely. On the whole, the exercises are on good lines, and should prove very useful. It is to be hoped that similar supplements will be issued to other volumes of the Pitt Press series.

Histoires Courtes et Longues pour lecture expliquée et reproduction. Par L. Chouville. 182 pp. (Oxford University Press.) 2*s.* 6*d.*—Monsieur Chouville is a distinguished exponent of the reform method, and in the volume which he has contributed to Prof. Savory's series he has done a good piece of work. The anecdotes and episodes are well chosen and suitably graduated; there is a good set of questions to each piece; and the difficulties of vocabulary or construction are explained in footnotes with that skill which comes only from extensive experience. The exclusion of English is absolute; we think, however, that in the case of a word like *pinson* the most strict reformer would have no objection to the addition of the English equivalent to the explanation "petit oiseau qu'on trouve dans les bois et dont le chant est assez agréable." Such an explanation is correct so far as it goes; but it does not necessarily suggest the exact kind of bird meant by *pinson*.

First Lessons in French. By P. Banderet and Ph. Reinhard. Adapted for the use of English pupils by Grace Sandwith. viii+175 pp. (Harrap.) 1s. 6d.—This book is of the compromise type. It supplies a vocabulary to each lesson, and makes use of the translation of disconnected English sentences. (When did you pick this rose, this tulip, and this violet? My cousins are always docile and modest. Marie knits stockings; she sings. If our conduct were satisfactory, we should have a beautiful book, &c.) But we also find what it is now usual to call "reform exercises." The progress made in grammar is rather rapid: in this first course we find not only the *passé défini*, but even the past anterior. The vocabularies at the end of the book are not quite complete.

A. Daudet, Lettres de mon Moulin. Selected and edited by G. H. Clarke. xvii+139 pp. (Macmillan.) 2s. 6d.—Mr. Clarke's reputation as a good and careful editor of French texts is well maintained by this attractive selection from the "Lettres de mon Moulin." The introduction gives an adequate account of Daudet and his works. The notes give all necessary information; we notice with pleasure that the explanations are often in French, and that the symbols of the International Phonetic Association are used to indicate the pronunciation. (The second vowel of *lazaret* is not long, as is stated in the note to p. 36, l. 18.) The proofs have been read with commendable care.

Classics.

Caesar Imperator. An Elementary Latin Reader, with Vocabulary and Exercises on the Text by J. W. E. Pearce. 126 pp. (Dent.) 1s. 4d.—The short historical introduction and the vocabulary need not detain us: our chief business is with the text. This is adapted from Caesar's writings, so as to give a connected account of his career; the style has been simplified, and the grammar and vocabulary standardised on the lines of Arnold's "Basis Latina": that is, anything beyond the given standard is explained. The book will not serve for a first Latin book, but it will do for the next stage, as soon as the elements of grammar have been worked through. The notes at the end of each section explain allusions, and such points of grammar as will not yet be known. Exercises are appended. Some are questions in Latin, to be answered in Latin from the text. These will serve as models, for it should be assumed that this kind of questioning is done with every lesson *viva voce*, and the specimens given are not nearly enough. Other questions are on the grammar; others, again, are English sentences (adapted from the text) to put into Latin.

Only practical use can show how far the book serves its purpose. To us it seems well done, simple, and sensible, and compiled on sound principles. We miss, however, a statement of the amount of knowledge assumed in each exercise.

Herodotus I. (Clio). Edited by J. H. Sleeman. xxx+384 pp. (Cambridge University Press.) 4s.—If people will read Herodotus in an elaborate edition, they will find this one satisfactory. It has an introduction, which is excellent so far as regards its first part, the author and his sources; it contains also a summary of the book, which, with the detailed sectional summary, we could wish far away. The notes are short and to the point, with comparatively little translation; they explain difficulties and allusions as fully as anyone could wish. Perhaps Mr. Sleeman is a little credulous when he tells us that the Spartans were forbidden by law to possess gold or silver (p. 199). Passengers by railways are also forbidden to tip the porters. The geographical index is very full. As a rule, we do not approve of these indices, since their end is served as well, and more cheaply, by a small dictionary; but there is a great deal in this one which would not be found in the dictionary. It is an interesting edition.

Virgil, Aeneid VIII. Edited by L. D. Wainwright. xl+112 pp. (Bell.) 1s. 6d.—We have already noticed other volumes by Mr. Wainwright. This contains the usual introduction, and a vocabulary. It has a long running analysis in English, which we wholly disapprove, and a number of trivial notes, which are equally undesirable: thus 558, "*religione*, ablative of cause"; 646, "*nec non*=a strong *et*"; 475, "*regnis*, abl. of respect"; 624, "notice *teres*, smooth." When will editors give a chance to the reader's intelligence? An unfortunate misprint on the same line 624 makes *auro recocto* "oft-smelled" gold: it would be interesting to learn how many trustful schoolboys, when their intelligence is lulled to sleep by the other notes, reproduce this. The whole standard expected of the pupil is so low that it is impossible to criticise the book favourably. The illustrations, as usual in this series, are not exact reproductions, but are made up from ancient materials, and the authority is not given.

Versions of Latin Passages for Translation. By M. Alford. xii+312 pp. (Macmillan.) 5s. net.—This is a book of model versions from a collection of Latin passages; but at first we thought it was to be used in retranslation. For that purpose, if any use it, the book is well suited. A passage in the preface says that "the value of translation in teaching classics is being to some extent questioned." This seems to be a misunderstanding; as we understand the critics, they do not question its value as a final test of knowledge, or deny that it needs careful practice, but they deny its usefulness as the medium of teaching and learning throughout. Each piece has its reference, and if the teacher uses the original passages for practice, this book will certainly help him in correcting his pupils' work. We must say, however, that the style lacks the simplicity of the best English. There is sometimes a stiffness about it that proclaims that it is a translation.

English.

Grammar and its Reasons. By Mary Hall Leonard. xv+375 pp. (Pitman.) 3s. 6d. net.—Of the many books that America has sent us on the study of the English language this is one of the most interesting. It is intended for students and teachers, and therefore is not in any sense a text-book. It is rather a series of essays, of which the general aim is "to throw light from various sources upon the difficult parts of the subject and also to show some of the reasons why English grammar has been cast in the mould in which we find it." One of the most interesting features of the book is the well-selected numerous quotations from ancient and modern text-books which stand as chapter headings. The chapters themselves treat of the historic growth of grammar, grammar and logic, reactions against formal grammar, as well as of the more technical matters of inflection in its every detail. The second part of the book is a kind of pedagogical summary for teachers, for it treats of the relation of grammar to other kinds of study, of the connection between the study of English grammar and the study of foreign grammars, and of the place of grammar in the school course. These chapters are full of good things, and have behind them the golden maxim that "the method used should be inductive rather than authoritative." We could almost hope that the

chapter entitled "Some Words to Writers" had not been written; it resolves itself largely into *don'ts*, and somehow the *don'ts* of American writing are peculiarly irritating; here we frankly resent them—they almost detract from a very interesting book.

English Grammar and Composition. By A. M. Williams. xxx+395 pp. (Longmans.) 4*s.* 6*d.*—One half of the volume is devoted to grammar—letters, sounds, accidence, syntax, the history of English; the other half discusses purity of diction, punctuation, sentences, paragraphs, figures of speech, qualities of style, kinds of composition, versification. As a whole, Mr. Williams's work displays wide reading, deep thinking, and careful execution. He deals successfully with figures, style, and kinds of composition. But why should some pages bristle with names so uncouth and pedantic as ecphonesis, epiploce, epanadiplosis? The philology is sometimes weak. Pages 68 and 108 disagree about the number of dialects in Old English. The statement (p. 116) that *dog* is Anglo-Saxon needs qualification; for N.E.D. says *dog* occurs in late O.E., but its previous history and origin are unknown. By the way, the lengthy list of authorities omits N.E.D. as well as Paul's "Grundriss der germanischen Philologie." What surprises us most is the scanty treatment of essay-writing. The preface lays stress on "familiarising the student with the build of good English, in order to help him to write it." Valuable as the showing of good English is, practice in writing is much more valuable. Essay-writing surely deserves far ampler space than three-quarters of a page out of four hundred.

English Literature for Schools. By E. E. Firth. 198 pp. (Methuen.) 2*s.* 6*d.*—This book is *new*. What this means can be appreciated only by the reviewer of books on English literature. There are perhaps three writers of school books on English who do *new* work: to them we must add Miss Firth. The newness consists in the rediscovery of the fact that if you want to appreciate English literature you must memorise parts of it, and you must keep a commonplace book. The typing of names and of important headings is, if not new, at least done in an original manner; the bold insertion of maps is new: and the whole book breathes interest. If another edition is called for, as we hope it will be, will the editor add largely to the illustrative extracts and give more directions as to further study?

Gems of Oratory. By F. M. Bussy and G. R. H. Caine. 108 pp. (Collier.) 8*d.* net.—The full title of this little book is "Gems of Oratory and Notable Passages from the Lips of British and Irish Statesmen and Orators." The orators, or rather the orations, all belong, more or less, to the latter half of the eighteenth century, ranging from Walpole's Defence in 1741 to Sidmouth's speech on the Militia in 1807. As an illustrative reader for the period the book would be very valuable; the political ideals and forces of the time can be studied nowhere more pleasantly or interestingly than in the speeches of great orators like Chatham, Burke, Fox, Sheridan, and Grattan—the protagonists of an age when oratory and statesmanship were so intimately related.

History.

The Growth of the English House. By J. A. Gotch. viii+336 pp. (Batsford.) 7*s.* 6*d.* net.—This is a "short history of the architectural development" of English domestic architecture from 1100 to 1800, these dates forming, in the opinion of the author, the limits of that growth. It is told with a minimum of technical phrases, and what of these are used are explained in a glossary at the end of the book, where also we find a chronological list of castles and houses, a short bibliography, and a general index as well as an index to the very numerous illustrations. Mr. Gotch traces the development of house-building in England from the castles of the eleventh and twelfth centuries through the fortified manor-houses of the Middle Ages and the stately mansions of the Elizabethan and Stuart periods to the end of the eighteenth century. We can heartily recommend the book to our readers, and we think it would prove a welcome prize book to pupils who would be interested in the subject.

Stories from European History. By L. Dale. 144 pp. (Longmans.) 1*s.* 3*d.*—The twenty-three chapters of this reader are occupied almost exclusively with sketches of the careers of great warriors. The exceptions are the first, on the wars of the Greeks and the Persians; the fifth, on the Christians in Rome; the sixth, on Rome and the Goths; and the fifteenth, on the Spanish Armada. And these are mainly military or naval stories, with the exception of the fifth. It seems a pity that room could not be found for some stories of other kinds, but we suppose Miss Dale would think them too difficult for her young readers. There are four coloured plates and thirty-nine other pictures.

Modern England. By A. Hassall. 189 pp. (Blackie.) 1*s.*—This is the seventh volume of a series of seven dealing with the whole of English history. It covers the period from 1832 until 1909, and deals with all the important matters in which Great Britain was concerned, both domestic and foreign. There is a tendency to repetition of phrases, and there is not always a sufficient explanation of the incidents narrated. But, on the whole, it is a useful summary of the history, and is provided with ten maps and an index.

Mathematics.

Longmans' Practical Arithmetics. Part 5*a*, 4*d.*; Part 6*a*, 5*d.* Teachers' Books, 5*a* and 6*a*, 1*s.* 6*d.* each.—We have formed a very favourable opinion of "Longmans' Practical Arithmetics," which follow the newer methods and well deserve their title of "practical." The exercises include pure arithmetic, algebra (developed from the arithmetic), graph work, geometry, and mensuration. The questions, with few exceptions, deal with matters and occurrences well within the range of the pupils' ordinary experience. Parts 5*a* and 6*a* have been written specially for girls and mixed schools, but they seem somewhat too difficult, especially for girls, who would probably be more interested in household accounts than, say, in finding the area of an ellipse or the volume of a cone. It may be doubted whether the scholars should *learn* that the diagonal of a square equals the side $\times 1{\cdot}414$, or that the height of an equilateral triangle $=$ side $\times 0{\cdot}866$ (p. 35, Part 5*a*). Question 1, Ex. 286, seems to need some modification; it would not be easy to draw lines to represent (at any rate to the same scale) 4 miles an hour, 0 mile an hour, and 186,000 miles a second. These small details apart, however, the books are excellent, and we heartily commend them to the notice of teachers.

The teachers' books are valuable helps. The typical lessons follow the deductive line of reasoning, arranged in steps: (i) experimental work; (ii) examination of results; (iii) deduction of rule; (iv) verification of rule; and (v) application; and the books abound in practical suggestions to teachers. The books are among the best we have yet seen.

New Plane and Solid Geometry. By W. Wells. x+298 pp. (Heath.) 3s. 6d.—This is a compact little treatise by an American professor on the elements of geometry. Plane geometry is treated in five chapters, dealing respectively with I., Rectilinear Figures; II., Circles; III., Proportion; IV., Areas; V., Regular Polygons and Area of the Circle. The order and methods of proof deviate considerably both from the Euclidean model and from the more modern one represented by the Cambridge syllabus. Four chapters on solid geometry deal with the elementary properties of planes and lines, the mensuration of the simpler solids, and spherical triangles. Beginners are helped by several plates of coloured diagrams. The numerous examples are chiefly of a practical character, deductive exercises being few and of a very simple type.

Science and Technology.

A New Form of Mouth Blow-pipe. By E. T. Bucknell. (W. and J. George, Birmingham.) 3s.—This is a simple form of mouth blow-pipe which can be attached to the ordinary bench gas-tap. Its adoption in laboratories will do away with the separate gas-tube, which rarely fits into the Bunsen burner for which it is intended. Moreover, a steady flame is comparatively easily obtained with this instrument—a great advantage for chemical tests carried out on charcoal. It may even be used for glass-blowing, with the result that junior students may have constant practice in this difficult art at their own benches. The construction of the blow-pipe will be evident from the annexed illustration. The parts are simple, strongly

made, and replaceable. The exit tube for air is protected by the outer gas tube, and is not likely to become blocked by dirt, as commonly happens with the ordinary instrument. The suggestion may perhaps be made that a joint at the centre would allow of easier adjustment to the work in hand. Teachers of chemistry will do well to obtain a sample instrument and test its value for themselves.

A First Book of Physics. By Dr. L. Lownds. 145 pp. (Macmillan.) 1s. 6d.—The teaching of physics to junior forms in secondary schools is permanently established as an introduction to science, and experience has shown that the syllabus for the first and second year's work may well be restricted to the fundamental principles of measurement, mechanics, and heat. This small volume, which is an example of excellent book-production, is suitable in every sense for a course which includes these portions of physics. Elaboration is avoided, and the explanatory matter given will guide the student in carrying out intelligently a well-chosen series of simple experiments.

Practical Object-lessons from the Plant World. By H. J. Barnell. 171 pp. (Pitman.) 3s.—The educational value of most of these lessons seems highly doubtful. They are displayed in the traditional three columns, labelled "heads," "matter," and "method" respectively. The matter is the substance of any ordinary text-book of botany; the method is commonplace, and sometimes rather absurd. What is the use, for example, of teaching children such terms as "dicœcious" and "exalbuminous"? The book contains twenty-three pages of sketches, white on black.

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.

Physics Teaching in School and College.

In the recently published "Broad Lines in Science Teaching" (Christophers) is a paper by Prof. Alfred W. Porter upon the above subject; much of the essay consists of a plea for teaching electrostatics before current electricity, and with this part of it I am not concerned now, although I believe the large majority of experienced teachers hold the opposite view, and the argument that "*electrostatic* phenomena have in recent years taken a much more prominent place in technics owing to the use of high-tension *currents*" (the italics are my own) does not seem conclusive. Prof. Porter, however, when speaking of the first medical examination of the London University, states that no physics is required from the embryo "medical" except in preparation for this examination; and proceeds to ask, "Is it right that this training should be allowed to be given under the meagre and restricted conditions which are possible in a school?" This insinuation is so absolutely at variance with the facts, that I ask the hospitality of your columns to deny it. All our larger public schools, and a very large number of grammar schools also, are provided with well-equipped physics laboratories which have been built at considerable expense, are under the charge of highly qualified masters, and are inspected periodically by representatives of the universities; the teaching of electricity given in them is equal in every respect to that given elsewhere to students of the standard mentioned, and the fact that this instruction is given as a part of the regular education enables the master to make it more thorough than can be the case where the student is taking the subject as one of the many which have to be "got up" before he can proceed to his purely medical work. So much harm is done to the moral welfare of many boys by withdrawing them from the restraints of school discipline at an unduly early age, that I believe a serious harm to the boys themselves will result if statements such as Prof. Porter's are allowed to pass unchallenged.

Douglas P. Berridge.
(Hon. Sec. Association of Public School Science Masters.)

The College, Malvern.

By the courtesy of the editor I have been permitted to see Mr. Berridge's letter, and I desire to make a few remarks with respect to the questions dealt with therein.

By the words which Mr. Berridge italicises in the first sentence which he quotes from my paper it is made quite clear that he belongs to that very large class who are unfamiliar with the *electrostatic* effects associated with an electric *current*. There is much to be said in excuse of this unfamiliarity, for it is amazing how little attention is directed to them in elementary text-books. In fact, I only know of two text-books in which the field of electric force surrounding an electric circuit is sketched. Nevertheless, it can play a very important part.

Mr. Berridge is specially concerned with regard to my remarks in respect to the training for the first medical examination in the University of London. My opinion is that the conditions possible in schools are not suitable conditions under which to give *all* the training in physics required by the embryo medical. This insinuation Mr.

Berridge considers to be unjustifiable. From his categorical statements as to the sufficiency of such training, it is clear that my views will be met with considerable opposition by the public-school science masters whom he officially represents. I am only concerned to state that my opinion is based upon the attainments of those who enter our senior classes direct from school; it is these which lead me to hold that the conditions there must be meagre and restricted. The intermediate and first medical examination can be quite successfully "passed" from school, but it is not safe to take the passing of any examination as a test of a student's attainments; a cramming shop is much more efficient in this respect than any other way. I do not think that Mr. Berridge realises the extent to which mere preparation for an examination is departed from in college teaching—at least it is so here, and I do not suppose that we can claim any peculiarity in this respect.

One word with regard to the supposed harm done to the moral welfare of boys by withdrawing them from school at an early age. My experience is that boys who leave school at sixteen are no worse off in this respect than those who leave at a later age; indeed, the tendency is rather the other way. Rightly or wrongly, I have been forced to the conclusion that it is not always good for a lad to hang on at school mainly to become a prefect or a captain of his school. The same faculties which are thereby stimulated find plenty of scope under much fresher conditions in the athletic and social life of his college. Exceptions there are, no doubt (and my essay makes full allowance for such); my remarks only attempt to represent broad generalisation based on a survey of the two thousand students with whom I have come into more or less intimate contact during the last twenty years.

This question as to the conditions required for the formation of character is really the most important of all the questions which educationists should face. I know of no argument except that connected with character-formation for keeping a boy at school much beyond the age of sixteen, and I very much doubt its validity. But if it possesses validity we would much rather that the boy's course were adjusted so that he would reach college with a working knowledge of mathematics and mechanics rather than that an attempt should be made to teach him the other branches of physics with so little mechanics that it is almost no use at all. ALFRED W. PORTER.

University College, London, April 11th.

Manual Instruction in Secondary Schools.

THE circular of the Board of Education dealing with Article 8 of the Regulations for Secondary Schools, originally issued as Circular 603 in July, 1905, and revised as Circular 547 in June, 1908, has now been further revised and issued as Circular 740. The Board has again made a few tentative suggestions and teachers of manual instruction throughout the country may rejoice that yet another step has been taken in the direction they have pointed out for so long, although they must still regret the want of an authoritative statement.

In the first paragraph we are informed that the "Board have not laid down any strict definition of the nature of manual instruction . . . nor have they prescribed the amount of time that should be given to it." It is open to teachers of manual instruction either to praise the liberal spirit shown in the opening sentence, while regretting that the Board has not seen fit to prescribe some minimum of time, or to wonder whether in the present deliquescent state of public opinion the Board is capable of giving the definition it has not laid down and of exacting the definite amount of time from headmasters should it be prescribed. It is, at any rate, more charitable to adopt the first plan and be thankful that the Board has recognised its limitations and not attempted to enforce either a rigid syllabus or uniformity.

The object of manual instruction, as laid down in the second paragraph, and extended in the last, is clear and definite, although one fears that headmasters are still to be found who need further enlightenment—who either think the cry for manual training a passing craze or regard such training from the purely utilitarian point of view. It is for such as these—and they are legion—that one regrets the absence of an authoritative statement, both on the positive side as to what manual instruction means, is, can be, and on the negative side as to what it is not, in particular that in no sense is it to be regarded as vocational, industrial. The courses suggested, and the statements as to truth, thoroughness, accuracy of workmanship, avoidance of slovenly teaching, and so on, in § 4 are admirable, but they do not go far enough. What reformers want from our authorities is a definite lead, clearer and more stringent regulations. The circular says "the kind of instruction *ought* to be developed," "a workshop is *desirable*," "special provision will *not* be insisted on." One realises that the difficulty is one of ways and means; but surely the time has come when "must" should be written for "ought" and "necessary" for "desirable," while the word *not* should be eliminated from the last sentence quoted. Why must reformers still go on quoting reasons for the commencement or further extension of courses of manual instruction, based on the historic development of education? Is it still necessary to argue that manual instruction promotes general education, that it combines physical training and general dexterity of hand with the cultivation of the faculty of observation, the sense of form, the appreciation of the beautiful, and the foundation of taste, that it exerts a profound influence on the whole intellectual life, while it calls forth and trains the power of the will to work for a definite aim? As Dr. Stanley Hall says: "No kind of education so demonstrably develops the brain as hand training." Our nation is rich in learned and reflecting minds; what it needs now are men of energy, men of action, men who can do things. In spite of these recognised facts, our Board of Education lacks the courage of its convictions, and still issues leaflets of a permissive character.

In § 5 the time to be devoted to this instruction is considered, and, notwithstanding the cry of overloaded curricula, the Board is bold enough to suggest that a period of two hours, taken once a week throughout *a* term (a sentence reminiscent of the family doctor), is necessary to produce the best educational results in wood or iron work; in fact, it roundly states that good and solid progress can be made. Is it possible that it is in earnest? Does it, one wonders, realise what other nations have done and are doing? If so, teachers of manual instruction—reading, of course, "throughout *each* term" for "throughout *a* term"—will take their two hours as a *pis aller*, but when they have them they, like Oliver Twist, will ask for more.

It is not until one reaches § 7 that one finds that the Board has the root of the matter, and it is in this paragraph only that the permissive character which animates the whole circular finds its proper place. One may hope after reading that "the training sought is of a practical nature, and the work done should therefore not confine itself to exercises in method, but should be directed concurrently and almost from the first towards the production of actual things. . . . Any well-planned course of progressive instruc-

tion which, in the opinion of the school authorities, will carry out the general object . . . may be submitted."

If to clauses of such a liberal spirit as may be found in this and in the first paragraph the Board would add two stringent clauses incapable of evasion by the most reactionary headmaster—the first dealing with the place of manual instruction in the curriculum, the second dealing with the *minimum* time to be allotted the subject—teachers of manual training might possess their souls in patience for a year or two more, awaiting the inevitable coming of the Minister of Education who is at once an iconoclast and an administrative genius of the first order, who, formulating a statesmanlike policy, will acknowledge that "the day of the mere professor, who deals in knowledge, is gone, and the day of the doer, who creates, has come."

T. S. U.

Illustrated School Books.

During the past few years there has been in some ways a praiseworthy effort in the direction of illustrating school books. Much can be done by this method, provided the illustrations are of a suitable and refined character.

The majority of illustrated school books being of an elementary character, the illustrations should therefore be of a nature that children can appreciate, and yet they should attain to a sufficiently high level to be of real educational and artistic value.

I notice with regret that there is a tendency to reproduce very elaborate and showy water-colours, mainly drawn from photographs or niggling pen-drawings such as can be seen in the cheaper class of illustrated magazine; and, worst of all, actors photographed to represent characters from Shakespeare posturing in attitudes suggested by some photographer accustomed to supply the multitude with picture post-cards of their several favourites.

If at an early age children have constantly before them illustrations of an inferior character, they will gradually acquire a taste for vulgar prints and post-cards which, unless checked, will raise a false standard in their minds instead of encouraging their natural appreciation for good and simple drawings.

This leads me at once to the question of how school books can best be illustrated.

There can be no doubt that photographs and other mechanical means of copying nature, leaving nothing to the imagination, which has perhaps been stimulated by the story, but merely recording a handful of dry facts, have a less beneficial effect on the mind than some simple drawing in line, or line and wash. The same objection may be urged against the elaborately coloured and over-detailed water-colours, which may prove even more injurious on account of the false and unpleasant colouring being neither frankly conventional nor yet attaining to the beauty of tone and colour that one demands of a painting from nature.

When possible, as with books on Greek history or mythology, surely the best and most appropriate illustrations are to be derived from Greek sculpture and vase paintings, supplying as they do admirable illustrations to the text, combined with unapproachable artistic beauty.

If the subject be modern, and one is dependent on contemporary work for the illustrations, let drawings executed in simple colours and broad masses, such as the well-known Fitzroy pictures, be chosen rather than the type of picture to be met with in the Christmas pictorials. Here again reproductions of good pictures may be used with advantage; but great discrimination should be observed in the case of modern paintings, and it may be well to remind the unwary that a picture is not necessarily a work of art because the author has had some degree or honour conferred upon him. Perhaps this will direct the attention of schoolmasters to the importance of seeing that whenever illustrated books are given to their pupils, they are not contrary to the teaching of those responsible for their preliminary art education. Let us remember that the artistic instinct of the coming generation can be perverted or destroyed by the unfortunate influence of badly chosen pictures.

C. J. Hamilton.

Clifton College.

A Suggested Four Years' Course in Geography for Secondary Schools.

In the April number of The School World a brief account was given (p. 148) of the scheme outlined by Mr. H. J. Mackinder for a four years' course in geography in secondary schools.

This scheme presupposes that the teacher of geography is entitled to ask that, before he begins to teach certain stages of his subject, care will have been taken by his headmaster that the pupils will have already acquired certain knowledge.

Mr. Mackinder suggests that before the work in geography on the home district—which is to occupy the first year—the pupils should have some knowledge of elementary geology.

Before the second-year work on the British Isles is undertaken, the pupil is to have some knowledge of elementary science; while some knowledge of history (*Weltgeschichte*) is to precede the third year's geographical work on Europe.

Mr. Mackinder suggests that this knowledge of cognate subjects is to be *postulated* by the teacher of geography.

It is possible, nay, probable, that as the history curriculum is altered an increasing number of pupils will be prepared with the postulated knowledge of world-history; but in the other cases it hardly seems likely that many schools will have a curriculum arranged to provide the knowledge postulated in geology and physics.

In the first place, there must be many schools where it is practically impossible to arrange that instruction in elementary geology should be given at all, and, secondly, there must be many schools where instruction in elementary physics, if ever given, is given too late to suit the requirements of geography as thus postulated.

What, then, can be done?

The course suggested emphasises the idea that the preliminary stage of secondary-school teaching in geography shall be devoted to land forms, and that after the study of form shall come the study of the other geographical "controls."

If this order be the essential order for teaching, then it behoves teachers of geography to attempt to secure the additions to the curriculum suggested by Mr. Mackinder; but if it be possible that there may be other equally valuable orders of approach to the geographical concept of the world as a whole, then teachers of geography are entitled to ask for the reasons why they should suggest the alterations to the curriculum as it is now being developed and modified.

It is possible, therefore, that some teacher of geography will continue a discussion of the issues raised by Mr. Mackinder, especially on the point that knowledge of land form must come first, and the reasons for this dictum. Possibly, also, some teacher may be prepared to suggest an alternative scheme, with details as to the local circumstances which have forced him to adopt the order of attack which he suggests.

It may be assumed that Mr. Mackinder has considered the alternative plans now in operation in the schools, and that there are especially weighty reasons why the course he suggests should be considered to be the best, but we may further ask whether his plan is merely to be taken "as a counsel of perfection" towards which those who are actually teaching in the schools may aim. Perhaps one of your correspondents will discuss this question.

B. C. WALLIS.

Two New Pieces of Physical Apparatus.

(i) *The determination of the coefficient of increase in pressure of air kept at constant volume.*—A bulb of about 2·5 cm. diameter is blown on the end of a piece of thick-walled glass tube. The latter is then bent twice at right angles, and the open end connected to a three-way tube by means of a piece of indiarubber tubing. The limbs of the three-way tube are conveniently about 3 inches long. At *f* a piece of glass tubing about 80 cm. long is connected to the upright limb by means of rubber tubing. The vertical limb of the three-way tube is bent at right angles and then attached to the bottle *g*, which contains water. The connecting rubber tube is fitted with a pinch-cock at *d*. A tin can serves as a water bath. Attach the rubber tube from a foot bellows to *c*, open the pinch-cock at *d*, and then work the bellows. Water will rise in the two vertical limbs of the

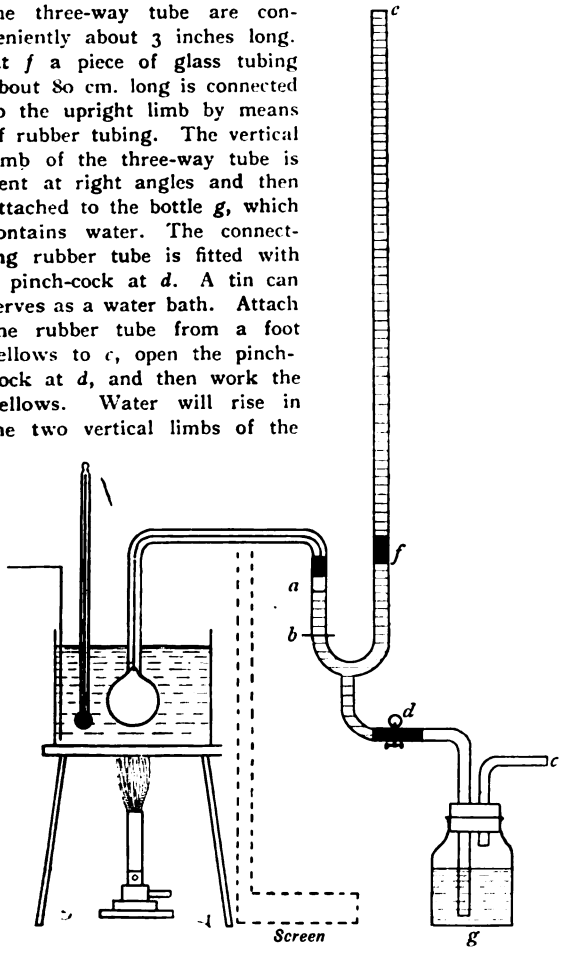


FIG. 1.

three-way tube. Open the pinch-cock until the level of water in each limb is the same. (To do this the apparatus may require to be disconnected at *a*.) Stick a small piece of gummed paper at the water-level at *b*. Work the bellows again, and open the pinch-cock. The water will rise to the top of the long tube at *e* and to *a* in the short limb. When this is attained close the pinch-cock. Observe the temperature of the cold water in the bath, and then commence to heat the water, using the stirrer. The air in the bulb expands and pushes the water down from *a* to *b*, the overflow escaping at *e*. When the level of water reaches *b*, take the temperature of the water in the bath, and measure the height from *b* to *e*. Also find the height of the barometer. The following result was obtained by the apparatus described:

Height of barometer = 75·2 cm.
Temp. of water in can at start = 12° C.
" " " finish = 32° C.
Length of water column, *b e* = 75·6 cm.

$$\text{Increase in pressure} = \frac{75{\cdot}6}{13{\cdot}6} = 5{\cdot}56 \text{ cm. mercury.}$$

$$\text{Increase in pressure for } 1^\circ \text{ C.} = \frac{5{\cdot}56}{(32-12)} = 0{\cdot}278 \text{ cm.}$$

Pressure at 0° C. = 75·2 − (12 × 0·278) = 71·86 cm.

Then coefficient of increase of pressure

$$= \frac{\text{Increase of pressure for } 1^\circ \text{ C.}}{\text{Pressure at } 0^\circ \text{ C.}} = \frac{0{\cdot}278}{71{\cdot}86} = 0{\cdot}0038.$$

There are incidental errors which preclude an exact result being arrived at, but, at the same time, a sufficiently accurate result for elementary work can be obtained, and without the use of mercury.

(ii) *The unequal expansion of metal rods.*—The simple apparatus here described is useful and cheap, and therefore can be used by individual members of a class taking a course in practical heat. A and B are binding screws.

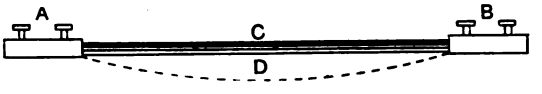


FIG. 2.

C and D are two metal wires—say, iron and brass—and their ends are tightly clamped in the binding screws. On heating the two wires in a Bunsen flame, the more expansible wire forms a curve similar to the one shown in the diagram. (The one given is slightly exaggerated.) On cooling, the wires again take up their side-by-side position. Other wires of different material can, of course, be substituted.

E. T. BUCKNELL.

Kingsholme School, Weston-super-Mare.

L.C.C. Report on the Teaching of English.

I WAS extremely interested in the January issue review of the L.C.C. report on the teaching of English. Other teachers' experience must always be a subject of lively interest to a teacher whose "first qualification is love for her subject," and I truly agree with your reviewer that it is the teacher's fault if the child cannot be interested and helped.

I am anxious to find out if among my numerous co-workers in the field of English there are any who can give me any suggestions as to a problem I am struggling to solve here in China. My pupils average sixteen years of age. They come to me with no knowledge whatever of English, and their ideas are mostly confined within the four walls of a house. They have been learning Chinese from early morning until late at night for about ten years, learning a lesson aloud, alone, irrespective of any other learner, and repeating it in the same way as soon as learnt. The construction of Chinese is as absolutely different from English as this method of learning lessons is from that of my class-teaching. How am I to tackle my problem of training twenty-five such pupils to speak and write simply, clearly, and with expression? I have no difficulty as to interest. Their powers of attention and work are unflagging, though they have, of course, no idea of studying, apart from set lessons, on their own account. I begin with conversation about some object or objects, writing the question and answer on the board,

and at the end of the period this is copied as a writing exercise. I seek to enlarge their vocabulary by variety in subjects learned—*e.g.*, geography with a sand-tray and pictures have proved very useful to girls who have spent their lives in Hong-kong, yet have never taken the ferry across to Kowloon.

But here I find myself baulked. They devour as much information as I please to give them. Their questions are never ending. They read fairly fluently, repeat poetry satisfactorily, work mathematics easily; but I can find no method which produces good composition.

In oral composition the Chinese horror of "losing face" prevents their making an attempt at self-expression lest their wording should not be the best possible. This also applies to paraphrasing. In an examination, those who have the most knowledge generally do badly, because of their endeavour (of which I cannot break them) to pack their information into long, unwieldy sentences. In class, I insist on answers to questions being given in a complete sentence whenever possible.

The greatest difficulty seems to be in the tenses of verbs; also in the use of the subordinate clause and of the relative pronouns and adverbs.

I should be grateful for any information as to plans successfully tried with other foreigners, particularly Eastern nations, or as to a good grammar beginning with the sentence, synthetically. I want one which does not take up valuable time teaching them not to say things they never dream of saying, or in proving that adverbs modify conjunctions and prepositions (which also they never do).

GERTRUDE L. BENDELACK.

St. Stephen's Girls' College, Hong-kong.

Schools Mutual Aid and Flower Fund Society.

WILL you allow me a little space for a report of the progress of the Schools Mutual Aid Society, which you kindly noticed in your columns at its first beginning, about four years ago?

The work is gradually extending itself, and recently the Children's Flower Fund, which for some time past had been working upon somewhat the same lines as the S.M.A., has amalgamated with us, so that the society is now entitled "The Schools Mutual Aid and Flower Fund Society," under the presidentship of Mr. Kay Robinson; Miss Beard and Mrs. S. A. Barnett are vice-presidents; and we have as patrons Lord Avebury, Dr. Kimmins, Sir Richard Melvill Beachcroft, and Prof. Sadler.

The object of the society is the promotion of correspondence between city and country schools. The country schools send up nature specimens—flowers, wild fruits, leaves, marine objects, fossils, grasses, &c.—to their city friends, and the town schools return letters, picture post-cards, magazines, scrap-albums, home-made toys, and any other objects of interest which they can provide. Careful instructions are given to avoid the uprooting of rare plants, and the taking of birds' nests or eggs, for the purpose of the correspondence.

Almost the only difficulty which we have to meet is connected with the expense of postage of correspondence. But at present the London County Council and some of the other educational authorities allow cost of postage from their schools (to an amount limited in some cases to 10s. a year from each school), and it is hoped that by degrees other county councils will grant the same favour. In many cases the cost is kindly defrayed by the teachers and scholars themselves, or by private friends; and we are very grateful for any donations or subscriptions to our funds for paying postage from schools where the expense is not otherwise provided for.

At present we have about 130 pairs of schools in the society, in addition to a certain number of town schools which are supplied with flowers, &c., by private senders. A visitor to any of our "Mutual Aid Schools," after the arrival of a parcel from their correspondents, would be quickly convinced of the pleasure and interest aroused in both teachers and scholars by the work.

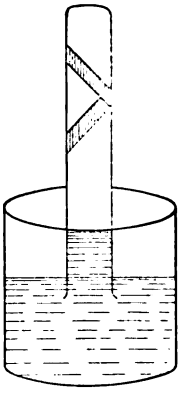
We are always glad to hear of fresh schools willing to join the society, and more especially country schools in the counties of Warwick, Gloucester, Somerset, Middlesex, and the East Riding of Yorkshire, where the county councils have granted cost of postage. The hon. secretaries of the society are Miss O. L. Cobb and myself. Schools desiring to join are requested to apply to Miss O. L. Cobb, 40, Redlands Road, Reading; and other correspondence should be addressed to the Hon. M. Cordelia Leigh, Stoneleigh Abbey, Kenilworth.

M. CORDELIA LEIGH.

Stoneleigh Abbey, Kenilworth.

The Composition of Air.

TEACHERS of science frequently have a difficulty in finding a suitable experiment which can be carried out in a short time by each member of a class in order to demonstrate the absorption of one-fifth of atmospheric air during oxidation.



May we direct the attention of your readers to the following simple experiment?

A piece of aluminium foil is bent at an angle of about 60°, so that when pushed inside a test-tube it rests on the side without falling. The foil is then moistened with a dilute slightly acid solution of mercuric chloride. The test-tube is now inverted over a dish containing water to a depth of about half an inch. The foil quickly becomes warm, and warty scales of aluminium oxide appear on the surface. In from five to ten minutes the water rises up the test-tube one-fifth.

E. WECHSLER,
A. WECHSLER.

London Day Training College.

The School World.

A Monthly Magazine of Educational Work and Progress.

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The School World

A Monthly Magazine of Educational Work and Progress.

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EDWARD VII. AS KING.

KING EDWARD VII. has passed away so recently, his death was so sudden and unexpected, the grief of the peoples of his vast and various dominions is still so keen and personal, that it is impossible to hope as yet to form a balanced and impartial opinion concerning the significance of his all-too-brief reign, or the importance of his own influence upon the current of events. The passing of Queen Victoria nine years ago, following as it did by only a few days the close of the nineteenth century, was generally felt to make an epoch in the history of the British Empire. The great Queen had reigned so long and prosperously, the period of her rule had seen such extraordinary developments in all departments of national activity, that even the most cautious historian realised that to whatever extent the calm judgment of posterity might modify the enthusiasm of contemporary observers, the Victorian era could not fail to stand in the records of all time as one of the most notable periods in the annals of human progress. Thoughtful people entered upon the new century and the new reign with a feeling that a great chapter of history had been closed, and that another and widely different one had been begun. The close of the reign of Edward VII. awakens no such sensations. It is true that the nine years of the dead King's rule have been eventful years. They have been marked by new and powerful movements at home and abroad. They have brought to the forefront of both domestic and foreign politics problems of far-reaching importance of which Victorian statesmen hardly so much as dreamed. But they have settled nothing. The great new movements are but in their early phases. The novel questions which demand an answer are as yet scarcely formulated fully; they have still to be considered; solutions have yet to be sought. Hence we realise that the reign of Edward VII. constitutes but the fragment of an era, and we suspect that it will leave little individual mark upon the long course of our national and imperial history.

If this is true of the reign as a whole, it is equally true of the personal action of King Edward himself. It is not that the dead monarch was without influence. On the contrary, his influence was great, and it was steadily increasing. But it was an influence so subtle, so pervasive, so illusive, exerted so indirectly, so tactfully, with so self-effacing a grace, that it is difficult to isolate it, to estimate it quantitatively, or to distinguish it from the other beneficent influences of the age. Possibly half a century hence, when the secret memoirs of the reign are published, and the confidential State papers of the period thrown open to students, future historians may be able to say, "King Edward himself did this worthy act; King Edward was the prudent author of that far-reaching policy." But it is more probable that critics of later generations, like mourners of to-day, will have to be content to recognise the influence of the King as powerful for good without being able to define it precisely. No one can read the story of the life of the late Sovereign without perceiving it to be the record of a career marked by high courage, unfailing kindliness, continuous labour, ceaseless devotion to duty, and crowned by conspicuous success due to truly royal capacities of government—resolution, tact, and skill.

Of the ability of King Edward there can be no doubt. It is true that his talents were not of the scholastic order. Fortunately, it was not necessary that they should be such. Whatever inclination he may have had towards book-learning in his early years, it could hardly have survived the appalling system of education to which his unfortunate youth was subjected at the hands of conscientious pedants who drew up interminable memoranda on the subject, and ground away incessantly upon his harassed brain without mercy, or humour, or a suspicion that they might be wrong. But though King Edward as a young man welcomed emancipation from pedagogic tyranny, he made himself an expert in all the branches of his own royal craft. None of his predecessors have been, none of his successors can hope to be, more perfect masters of all that appertains to the business of kingship in this country.

In his first utterance when he came to the throne King Edward said, "I am fully determined to be a Constitutional Sovereign in the strictest sense of the word." To the will thus clearly and emphatically expressed was joined the perfect capacity to realise it. The King's apprenticeship had been an unusually long one, and it had been served in the excellent constitutional school of Queen Victoria. If Queen Victoria at all deserves the appellation of Great, it is because she apprehended with consummate judgment the true and proper position of the ancient English monarchy amid the novel conditions of nineteenth-century democracy and expanded Empire. She perceived that the monarch had become the crowned and permanent President of a virtual Republic, and that the function of the monarch in the State was not unlike that of the Speaker in the House of Commons. King Edward, as Prince of Wales, was trained in this new and revolutionary tradition of royalty; and he learned his lesson so well that he has decidedly improved upon the practical exposition of the novel principle which Queen Victoria gave. The Queen, unable to disburden herself of the load of sorrow which the death of the Prince Consort placed upon her in 1861, withdrew too much from public life during the middle portion of her reign, and took less than her rightful place in the social and political world. But King Edward, regardless of personal disinclinations, amid sorrows and sufferings, and up to the very day of his death, played his full part manfully and well.

He had, indeed, a high sense of the dignity and importance of his office. Fully as he recognised the fact that his powers and prerogatives were limited by the popular will in a manner that would have appeared strange and humiliating to every one of the six Edwards who at intervals had preceded him upon the throne of this realm, he nevertheless felt as strongly as any of them that he had other titles to the Kingship than the vote of an electorate. To those who know how carefully all royal utterances are weighed, there is peculiar significance both in what the King said and in what he left unsaid in the early weeks of 1901. He made no reference to the Parliamentary basis of the English monarchy. He used language which would have fitted in well with the Stuart theory of royalty. He spoke of "the arduous duties which now devolve upon me by inheritance"; he dwelt upon "the great and sacred responsibilities which through the will of God I am now called to undertake"; while still more explicitly to the princes and peoples of India he issued the proclamation: "Through the lamented death of my beloved and dearly mourned mother I have inherited the throne, which has descended to me through a long and ancient lineage." Wholly in accord with this high conception of hereditary and sacred royalty was the splendour upon which King Edward insisted in the performance of all State functions. If he was determined to be constitutional, he was by nature and instinct, without any determination, every inch a king.

Nowhere did the kingliness of Edward VII. manifest itself more impressively than in the sphere of foreign relations. He moved among the Courts of Europe not only with the authority of the titular ruler of the vast British dominions, but with the easy dignity of one whose ancestry stretched backward through a long line of monarchs until it was lost in the antiquity of primitive mythology. Hohenzollern, Romanov, Bourbon, and even Hapsburg dynasties are but young when compared with the venerable dynasty of the West-Saxon Cerdic. The first Edward who ruled over England, son and successor of Alfred the Great, came to the throne exactly one thousand years before the last Edward, his descendant. The great hereditary position of the late King gave him an enormous initial advantage when he personally approached foreign potentates in the interests of his country's policy and of the peace of Europe. There is no doubt that he acquired much influence abroad, and there is equally no doubt that his intimate knowledge of Continental statesmen and people was of incalculable value in guiding the policy of the British Cabinets. Yet so thoroughly constitutional was his action in all the delicate situations which arose during the nine years of his reign that no one can separate British foreign policy into two sections and say: "This was the King's; that was the Minister's."

The King's great task was the removal of international misunderstandings, and the maintenance of those relations of cordiality and mutual trust without which diplomacy operates in vain. When he came to the throne he found Great Britain isolated in the world. The Boer War had alienated European sympathy from this country. France was smarting from the memory of Fashoda; Germany had not recovered from the indignant rebukes which the Kaiser's telegram to Kruger had evoked; Russia still nursed the ancient grudges which she had carried from the days of Palmerston and Disraeli, and still resented the obstruction which British policy continued to place in her way whenever she sought to move towards the Mediterranean or the South Pacific. Immediately on his accession, King Edward exerted his influence to bring to an end the Boer War. When peace was concluded he himself received in audience some of the Boer leaders, and charmed them by his courtesy and affability. One of them was asked: "What are you going to tell your people about the King?" He replied: "I shall tell them this: that I think that if we had sooner known the King, and the King us, many things might have been different." The King put men in the mood of conciliation, concession, mutual confidence, and friendliness.

It was easier, however, to reconcile Boers to submission than to soothe the pride of France, so deeply wounded in 1898 by the incident of the Upper Nile. Yet the task was not too delicate for King Edward to attempt, nor too difficult for

him to accomplish. He boldly went to Paris in 1903 as though in total unconsciousness that the relations between France and Great Britain were strained, and as though oblivious of the fact that responsible politicians feared insult and even danger. He achieved a complete triumph, and opened up the way for a complete restoration of friendly relations. It is true, of course, that the political situation, both in Europe and the East, made the *entente cordiale* eminently desirable for both this country and France; but it is also true that apart from the King's personal intervention the Cabinets of the two countries could not have approached one another with any prospect of success for several years after the *entente* was actually established. The restoration of friendship with France paved the road for renewal of more confidential relations with Russia, and here again mutual visits of the King to Reval and the Czar to Cowes have played an important part.

The last and most arduous diplomatic task to which the late King applied himself was the effecting of an understanding with Germany. The difficulty of this task lay in the fact that in the case of Germany the difference has been not merely of the nature of a misunderstanding. Beneath the misunderstanding there lies a real clash of policies and a serious conflict of interests. Even in these unpropitious circumstances the visits of the King to Kiel in 1904, to Cronberg in 1906, to Wilhelmshöhe in 1907, and to Berlin in 1909, together with the return visits of the Kaiser, tended to ease the tension and to render the danger of friction between the Chancelleries less acute.

In view of his active and beneficent influence on European politics, King Edward is sometimes spoken of as "The Peacemaker"; but the appellation is not a good one. It was not as a maker of peace, but as a restorer of friendliness that he played so notable a part on the stage of world-politics. And this he did without the smallest sacrifice of his personal principles or the national interests. He was not a King who would have cherished peace at any price. He would have known how to inspire his people to fight, if it had been needful to fight in any good or necessary cause. But he realised that few British interests can compare in importance with the maintenance of the peace of the world. Hence he laboured to heal those differences which are the fruitful causes of war. He strove hard to bind together in loyalty to the throne and in mutual support the widely scattered parts of his large dominions. He lent his aid to all good causes which had as their object the relief of suffering, the healing of the sick, the rescue of the fallen, and the comforting of the poor. He took an interest in many sides of the national life—in agriculture, in sport, in industry, and in art. His presence in his high position inspired confidence in the minds of all classes of his subjects; his sane judgment was as sure as was his kingly honour.

From the grave of our late beloved sovereign and lord, King Edward, we turn our faces towards the troublous future with the prayer that those who come after him upon the throne of this Empire may be endowed with those qualities which have made him so ideal a representative of his people and his age. The King is dead.

GOD SAVE THE KING!

F. J. C. H.

THE TEACHING OF ELEMENTARY GEOMETRY.

By R. NETTELL, M.A.
Royal Naval College, Osborne.

IN discussions on the teaching of elementary mathematics, it is often asked at what age a boy should begin the study of geometry. Now if by geometry we mean purely scientific geometry involving logical proofs, it is practically impossible to give a satisfactory answer, as it must depend entirely on the boy himself. But if we are permitted to consider his true education and development, we must treat geometry in its early stages not as a branch, but as a means of education; and, keeping this end in view, we shall begin to prepare the way for the future study of scientific geometry as soon as a child has gained sufficient control over his fingers to enable him to make use of a pencil. Advantage should be taken of the keen desire that children have to represent on paper persons and objects with which they are familiar. They have a genuine love for this; and although their productions are often of the crudest nature, yet by encouraging them to use a pencil—and paint-brush, too, if they wish—they acquire a certain facility with and control of their fingers, whilst at the same time they exercise their perceptions, and so induce greater accuracy and completeness of observation. Moreover, by carefully worded criticisms and questions they can be led to pick up a considerable amount of general knowledge relating to the things they have attempted to draw.

Attempts to portray familiar objects lead in time to the need for simple instruction in perspective; not perspective treated scientifically, but quite empirically. We can give a fair idea of what is meant by perspective by simply directing attention to the outlines of some part of the view obtained from the class-room window, the observer standing well back in the room. If two rulers are laid along the window-pane with their edges coincident with two parallel outlines of some object, such as the two sides of a road, or the ridge of a roof and the water-shoot running under it, it will be clearly seen that the rulers converge towards the more distant part of the object. If various objects are picked out and their outlines treated in this way, boys soon begin to grasp the underlying principle of perspective. The lesson can be carried further to advantage by setting up some simple apparatus. Clamp a piece

of plate-glass vertically, and about two feet from it fix a piece of cardboard with a small hole punched through it, to act as an eye-piece, thus keeping the position of the observer fixed. Now place a small box or book behind the glass. The pupil must now sketch in with ink-dots on the glass the outlines of the object as seen by him through the eye-piece. If a sheet of white paper is then placed against the other side of the glass, he sees that what he has drawn represents the object. By changing gradually the position of the object, he may be shown how some lines converge more and more, and whilst some shorten and finally disappear from view altogether, other lines appear and lengthen; and he is at last led to see that lines of certain lengths, placed in certain directions on a plane, can represent lines of other lengths and having other directions in space.

The boy should now be encouraged to draw a cube in various positions without the aid of the glass, although sometimes using it to test his results and to discover his errors. From this he should advance to the cuboid, triangular prism, and possibly to the hexagonal prism. By this means he will acquire some knowledge of the elements of geometry. He learns of straight lines, parallel lines, points, planes, and so on. If, too, the sphere and cylinder are included in the solids to be sketched, these will furnish him with elementary notions of the circle and of curves generally. With regard to picking up knowledge in this way, Herbert Spencer remarks: "Just as the child incidentally gathers the meaning of ordinary words from the conversation going on around it, without the help of dictionaries, so, from remarks on objects, pictures, and its own drawings, will it acquire, not only without effort, but even pleasurably, those scientific terms which, when taught at first, are a mystery and a weariness."

Having now reached an age when he may be entrusted with a pair of compasses, the boy should be encouraged to use them to test the accuracy of drawings he has made; and, as a further development, he should be set to cut out from paper or cardboard exact copies of simple shapes and solids. There can be little doubt that geometry owes its origin to the endeavours of artisans to find methods of making accurate measurements for building purposes and for the enclosing of land. These methods once discovered were treasured for their utility. Hence, if we are to follow the historical sequence, we should endeavour to place the boy in such a position that he is forced to acquire geometrical methods from the experimental work that he does in his efforts to produce accurate copies of the models given him. In other words, his geometry should be empirical, not scientific. He will soon find it impossible to get good results without the aid of his compasses, and he should be led on to discover, so far as possible, without assistance, methods of bisection of lines, how to draw perpendiculars, to describe a square, and so on. From these he may be led on step by step to more complex problems.

But here a word of warning seems necessary. The cutting out of paper patterns and building up of cardboard models, though admirably suited to meet the needs of small boys, is not necessarily good for the older but backward type of boy who has begun geometry late. A little of this practical work will suffice for such boys. They resent being compelled to devote lesson after lesson to it, and to force them to settle down to what they feel is a mere childish amusement develops neither their minds nor characters, nor does it tend to give them any respect for the subject that they are supposed to be studying. To follow slavishly the lines laid down in the majority of school text-books is to overlook the fact that most modern geometries have been written for boys who begin the subject young; and it is for these that most of the elementary exercises have been set, so that they are not always well suited for those whose general development is in advance of the development of their geometrical faculties.

Where there is a carpenter's shop, or where engineering works are attached to a school, the old but backward boy has something workable to deal with, something that seems a piece of real life, and there will be no need to worry him with excessive making of paper models.

The period of empirical work is one of the utmost importance in the general development of the boy, and, if well spent, it will prove the greatest help when the purely scientific geometry is begun. In practice it will be found best to begin the latter as soon as the boy has become thoroughly familiar with ordinary simple constructions, and for a time the two systems—the empirical and the scientific—should run together. By this time the boy will have acquired familiarity with geometrical phraseology and geometrical figures, and he will therefore be in a position to concentrate his full attention on the purely reasoning part of the subject. He is treading on familiar ground, where he can recognise the sights that meet his gaze, and he knows where he is being led.

A much more important thing than the acquisition of knowledge is the organisation of knowledge. It is one of the greatest factors of success in everyday life. Now, in the teaching of geometry we endeavour to train the pupil to organise his facts, to recognise those necessary for the solution of the problem, and from them to draw true conclusions.

If the suggestions of the Board of Education, as made in their circular of last year, are taken to heart, we shall be able to make more use of elementary geometry as a training ground for this faculty of organising knowledge. By widening the fundamental basis of our reasoning, we shall no longer be compelled to reject as "not yet proved" so many of those facts that the beginner had acquired at the outset of his experimental work, and which he feels he may legiti-

mately employ as a basis of reasoning; we shall be able to leave him enough facts to feel that he still has something left on which he may build up his argument. There is no need to refer further to the Board of Education's circular. It was fully and widely discussed in all its bearings in the May and June numbers of last year's SCHOOL WORLD.

A great deal of interesting and instructive work can be done by pattern-drawing. Boys take to it very well, and it combines the advantage of training the eye in geometrical symmetry with that of keeping a high standard of accuracy constantly before the boy. By experimenting, he discovers properties for himself, and the training in habits of observation and deduction that results from this is particularly valuable to a beginner. He should be encouraged to seek out the causes on which these properties depend, and although there will probably be a tendency towards loose reasoning at first, yet a sympathetic teacher can keep a check on this without in any way damping the enthusiasm of his class.

Work of this kind can be made very stimulating, and often succeeds in arousing a keen and lasting interest in geometry. To seek for a proof of the accuracy of the discovery that one has made oneself seems a much more personal and interesting matter than doing an ordinary rider taken from a text-book. The more a class of young boys can be encouraged to discover properties for themselves, and to prove them to be correct, the sounder will their training in geometry become, and the more highly cultivated will be their powers of observation. True observation, it should be remembered, is not a matter of extreme sensitiveness of eye or hand or ear; it is the offspring of genuine interest and well-organised knowledge. Now in order that there may be any true progress, it will be necessary that some, at any rate, of the facts proved should be remembered. Hence the exercise of the memory must play an important part in the study of geometry. Also, for practical reasons, it is necessary that boys should be able to reproduce something of what they have learnt. The public demands that its children shall pass examinations, and this means that they must be able to write out proofs and propositions in such a manner as to satisfy examiners.

It is impossible for a boy to do this without a considerable exercise of his memory. Now, when we speak of "memory" we imply three things: (1) something sticks in the brain; (2) it can be recognised when met again; (3) the power of calling it up to the conscious state of the mind at will. Psychologists say that the first cannot be improved, as it depends on the nature of the brain-cells. The second depends on the amount of attention concentrated on the thing to be remembered. The third, however, can be improved, as it depends on the number of ideas associated with it. According to Prof. James, "The more other facts a fact is associated with in the mind, the better possession of it our memory retains. Each of its associates becomes a hook to which it hangs, a means to fish it up when sunk beneath the surface. . . . The secret of a good memory is thus the secret of forming diverse and multiple associations with every fact we care to retain."

We may, then, safely assume that to get the best results we must associate the propositions —not only the facts, but the full reasoning—with as many ideas as possible. In practice this seems to resolve itself into the working out of riders in which the reasoning involved resembles very closely the lines of reasoning in the proposition. Experience proves that, in order that boys may be able to reproduce propositions correctly, it is absolutely essential that time should be devoted to practice in writing out proofs, after they have been done orally.

The experiments relating to memory and association made by Ebbinghaus, the pioneer of work of this kind, go far to prove that in the long run there is a saving of time if the repetitions of a piece of work to be committed to memory are spread over a series of lessons, instead of being done thoroughly in one. For example, if ten consecutive repetitions, without intervals, are required to bring the knowledge to a certain standard, it will be found that a smaller number, probably seven or eight repetitions, will be needed if intervals of, say, twenty-four hours are allowed to intervene between some of the repetitions. It is possible that this may be in part accounted for by an increase of associated ideas. It seems reasonable to expect more ideas to be associated with the repetition when it is done on different days, probably in different circumstances of the weather, or of the order of sitting in the class-room, and so on, than when it is done in one continuous lesson.

This leads us to the conclusion that it is better to leave a proposition only partly learnt—and this, it should be realised, is not the same as only partly understood—and press on towards the next, rather than to finish each thoroughly as we go. But there must be frequent and regular revision of all the work that has been done before. This may sound rather a big undertaking, but experience has shown that it does not take the time one would at first expect; for, as the earlier propositions become thoroughly well known through the constant revision, they may be dropped from time to time or done only very rapidly. By tracing the proof of each new proposition back step by step to the fundamental hypotheses, not only can boys be gradually led to see the logical sequence of their reasoning, but they see that they have made progress, and are encouraged accordingly. It is often pleasant to look back over the hill that we have climbed and to note the difficulties we have overcome; moreover, we gain a wider view of what we have accomplished, and see things in a truer perspective; and nowhere is this more truly so than in the case of the young boy who is making his first formal efforts to master the logic of geometry.

"PARENTS' NIGHT."

By Alfred H. Angus, B.Sc.
Headmaster, George Dixon Secondary School, Birmingham.

SOME apology may be deemed necessary for bringing the subject of this article to the notice of readers of The School World for a second time,[1] but the tremendous and far-reaching good that a well-conducted function of this character produces in the life of the school is more than sufficient justification for so doing.

The institution of "Parents' Night" in the George Dixon School was due to a recognition of the principle that school and home must unite in aim, and must co-operate in action if the best is to be made of every boy in the school. The continuance of "Parents' Night" as a permanent fixture on the school calendar of events is the tribute of staff and parents alike to the wonderful and pleasant help the meeting affords to both in their efforts to develop boys into manly, well-trained, and capable citizens.

Our *modus operandi* may be detailed and explained briefly as follows. Accompanied by an explanatory letter, formal invitation cards are sent out to parents and guardians to an *evening* meeting, for we want fathers there as well as mothers. The large number to be sent out compel, unfortunately, a circular letter, but it is made as direct and personal as possible—a small point, but an important one—by having a blank left for the names of the addressees, which are specially filled in, thus avoiding "Dear Sir, or Madam." After an introductory sentence intimating the intention and the date, the aims of the meeting are set forth thus:

> As I have indicated in previous letters on this matter, I think it necessary in the interests of every boy in the school that his parents should have opportunities from time to time of seeing the actual work of the school as a whole and of coming into closer touch with the men to whom the educating and training of the boy for complete citizenship is entrusted. The experience of every member of the staff shows emphatically that the benefit resulting from Parents' Nights has been much greater than we ever expected. Undoubtedly, as a direct result of these meetings the school is enabled to do better in every way for every boy in it. It is therefore with great confidence and earnestness that I ask you to accept the invitation if you possibly can.
>
> During the assembly matters of much importance to the school will be submitted, and I invite discussion and questions on subjects of general interest to the school, but I must ask that notice of any such points to be raised be sent to me in writing on or before ——.
>
> I would remind you that the meeting is a confidential one, and that only parents or guardians of our boys are invited. I heartily hope you will be able to attend; your early reply will be much esteemed.

The letter is then concluded and autograph signed by the headmaster.

The date of our "Parents' Night" is not annual, but is kept movable, so that the work and general state of the school at different periods of the year shall be seen by our allies. Our first was held in the third term, the second in the spring term, and our third on December 15th last, in the first term of the school year.

On the invitation card is given the time-table of the evening, thus: Reception (tea and coffee), 6.45 to 7.30; Inspection of Work and Buildings, Interviews with Staff, Instrumental Music, 7.30 to 9; Assembly in Hall (headmaster's address and discussion), 9.

The guests, strictly limited, again be it noted, to parents and guardians, are received in the ante-hall by the headmaster and his wife, and then passed on to the main hall. Here light refreshments are served, and with the masters strolling about any possible "ice" is broken, and everybody prepared to take part in the serious business of the evening. At 7.25 the headmaster briefly indicates from the rostrum how best the time may be spent until 9 o'clock. Promptly at 7.30 the form-masters repair to their rooms for the purpose of giving short interviews to as many parents as care to call upon them. In the form rooms everything is *in situ*, as for the ordinary work of the day, for an important point about the whole affair is that the school shall be seen in its workaday aspect, as a "school in being," and not decked out for special show. Consequently all exercise books and other similar work, good, bad, and indifferent, are shown, giving parents an opportunity of comparing the work of their own boy with that of his fellows. Further, sets of boys are at work in the laboratories, gymnasium, art room, and handicraft rooms, under the direction of the specialists in the several subjects, the boys being chosen not in any way to "show off," but merely as ordinary average individuals to be used in demonstrating the way the work is carried on. Four different squads are successively employed in the gymnasium, where they give four separate displays so as to avoid undue fatigue, for the work done in this, as in every other, department, is very strenuous throughout the ninety minutes. During this period the school band, under the conductorship of a senior boy, performs a programme of instrumental music for the entertainment of any guests who care to sit about and chat whilst waiting for the assembly to commence or to interview a busily occupied master.

These interviews are one of the most valuable features of the whole evening. Form-master—school father, guide, philosopher, friend, to the lad—and parent can compare notes, exchange views and confidences, clear up misunderstandings and differences, fortify and encourage one another if need be, take counsel together on their joint business of "man-making." Never, after the first of such interviews can a boy play off home against school, or *vice versa*, nor can he ever hope unworthily to enlist the sympathies of a misguided or misinformed parent against a master known to him only as a name frequently quoted in the household as a byword for all that is hard, unjust,

[1] See "A Parents' Evening," by J. L. Paton, The School World, May, 1907.

and biassed! He knows that the knowledge on both sides has become too complete for the possibility of prejudice, and he soon learns, if he never knew it before, that school and home are both pulling the same way, and that his best policy is to yield to the pull in that common direction.

If the boy be critical enough he might discern thereafter differences of treatment in various ways at either home or school, or both, which may or may not be in the direction of easing the burden of his life, but certainly have the effect of making him better able to carry it. An alteration in the hour of bed-time; increased responsibilities and duties; decreased pocket-money; more frequent commendation; more frequent and more patient help with the hated subject; opposition to a cherished hobby suddenly transformed into encouragement; an oft-used and serviceable old friend of an excuse unexpectedly found no longer of any avail; a keen and friendly interest in school and its affairs found at home strengthening and inspiring the lad on his way; a "combine," felt rather than seen, of sympathetic forces unobtrusively, unaccountably, but very powerfully, stimulating and helping every aspiration to morality, purity, and righteousness; these, amongst a host of others, are typical of desirable changes wrought on behalf of many a boy in the school as a direct result of these pregnant interviews.

Further, a pleasing characteristic to be observed in connection with the interviews is that on no occasion have they been marred by the introduction of anything savouring of petty gossip or querulous complaint. Everybody appears too keen and too much alive to the real objects of the gathering to attempt so unworthy a waste of precious time.

In no sense is the meeting merely a social one, in no sense comparable with speech day or similar function; it is a meeting of the partners in the firm, the real directors and shareholders; nevertheless, there is neither relinquishing of the strength of position of the educational expert on one side, nor a loss of parental authority and control on the other, but by a judicious interchange of point of view, with perfect frankness and confidence on both sides, there is a strengthening and unifying by joining hands to promote the truly constructive in education. In a word, the sole business of the firm is man-making, and every member of it at such a meeting is taking steps to ensure that no mutually destructive lines of action shall be allowed to exist in school and home.

In addition to the work of the school, its whole machinery is shown so far as ever is practicable, so that no parent need be ignorant of any of its concerns. The registers, detention book, late and absence books, syllabuses, time-tables, home-work records, visitors' book, library catalogues, and the like, even to the headmaster's "weapons of offence," if wished for, are all laid out for inspection.

The headmaster now grants no formal interviews on this occasion, as parents can see him at any time during the year by appointment, but if a guest cares to "buttonhole" him for a two minutes' chat as he moves about the building, he is available for the purpose.

At five minutes to nine the school bells are rung as a signal for the gathering in the main hall, and notifying all boys to depart for home and leave the arena in the sole possession of masters and parents for the remainder of the evening, and exactly on the stroke of nine the headmaster ascends the platform and, supported by the whole staff, faces a keen and interested audience. Talk must now be fast and furious in order to traverse all necessary points in a reasonable time. Sundry bits of information on school affairs that it is essential the parents should have at first hand form the introduction. Next subjects and questions of which previous notice has been given are discussed, explained, and answered by the headmaster. Supplemental and additional questions are sometimes asked, and so far as possible are fully answered. Brief expressions of opinion and terse discussion are welcomed, and experience shows that these add to the value of the meeting and are quite easily kept within judicious bounds.

The alleged decay of habits of courtesy and reverence in the rising generation and how to arrest it; the reason why so little time is devoted to formal English grammar study; what is done in the way of obtaining situations for boys on leaving school; methods of assigning marks; the effect of "scouting" on school work; why Rugby instead of Association football is the school code; a request for public advice on recreative reading for boys; these are samples from a long list of subjects that have been dealt with from time to time on previously given notice. As before indicated, supplemental and additional questions are asked, and these are dealt with as faithfully as possible. Hitherto no question of an indiscreet, embarrassing, or in any way objectionable nature has been asked at any of our three meetings, nor have we yet experienced the grumbler, the obstructionist, or other unreasonable person. Judging from inquiries I have had from America as to this portion of our proceedings, this appears to be a very possible danger in a United States gathering of this type. Various reasons might be assigned for this, but speaking so far as my own experience goes in this school, I am firmly of opinion that when British parents see sincerity and fixity of purpose in education as applied to their children, supported by honest and earnest effort, they are only too ready to sympathise, support, and help.

It may be remarked of the answers to certain questions raised that they are naturally not always just what the inquirer expects or hopes for. Indeed, merciless treatment has had to be meted out in one or two cases, but this notwithstanding I have had nothing but respectful and interested attention, even when the expert educa-

tional view has badly clashed with some popular, parental, empirical fallacy.

The conclusion of the address is devoted to a short treatment of *one* aspect or department of school life or educational policy. More than one cannot be attempted, for the few minutes remaining limit that treatment to the scantiest, and here it is hoped that more doctrine is preached by thought-provoking suggestion than by actual declamation. The perspective view of school from home, the real place of the playing field in our educational ideal, personal purity of the boy, have so far been dealt with in this way. Here again the hunger for knowledge on the part of our parental audience, and particularly the desire to know our inside point of view, is most striking and encouraging. It is an additional plea, if one were needed, for the co-operation of these two factors in the fullest training and educating of our boys.

Ordinarily by ten o'clock the proceedings are over, the whole place deserted and in darkness, except the cheerful common room, where the jubilant and inspired, even though exhausted—and, truth to tell, it is an exhausting and "virtue" using evening—head and staff, amidst fragrant burning incense, compare notes and record valuable information and help obtained for use in the coming days.

EXAMINATIONS AND THE TEACHING OF ENGLISH IN SECONDARY SCHOOLS.

By W. WALTON, B.A.
Headmaster of Gateshead Secondary School.

AN examination of the pass lists of the Matriculation and University Senior Local examinations reveals the fact that the candidates are drawn almost exclusively from secondary schools. It would be futile to pretend that the motives of either schools or candidates who take these examinations are in all cases educational; the certificates gained are passports to higher or lower stages of various professions, and schools are under the necessity of directing the work of their pupils to these objects. This should not, however, involve any interference with a well-planned scheme of instruction nor any departure from the best methods of teaching; but very serious interference is inevitable in schools where regard is had to the syllabuses of some of these examinations, and in no subject is the grievance more acute than in the case of English.

The candidates for these examinations are, with few exceptions, over sixteen years of age; that is, they have, as a rule, taken the full four years' course in a secondary school. It is of the greatest importance, therefore, that the authorities should lay down syllabuses in English which may induce in secondary schools the best possible courses of work—courses suited to the pupils—and that the form of the examination (*i.e.*, the questions set) should be such as to discourage and to render nugatory all improper methods of study.

How far do they do this? To some commendable, though insufficient, extent in the case of the Matriculation examinations, and hardly at all in the University Senior Locals.

A good syllabus of English instruction is characterised by two main features:

(1) It secures sound, methodical training in the practice and principles of English composition; and

(2) It requires that pupils shall be taken through a *course* covering a fairly wide and *suitable* field of literature—a course which gives first-hand knowledge of many varieties of good literature, and does not restrict the attention to the minute dissection of one or two works.

If we examine the syllabus of the OXFORD SENIOR LOCAL by this standard, we find that composition is not compulsory, and that the selection of books for literary study is made without discrimination. It is possible for a candidate to pass on such a combination as Composition and "Woodstock," or as "Woodstock" and two cantos of "Childe Harold." It cannot be contended seriously that this is sufficient for an examination of matriculation standard.

Candidates who take the maximum number of sections may offer such a combination as Tennyson's "Lady of Shalott and Other Poems" and "English Idylls and Other Poems," Shakespeare's "Hamlet," Spenser's "Faerie Queene," i., and vol. iii. of the "Oxford Treasury of English Literature." There does not appear to be any guiding educational principle in the selection of the works which form the syllabus; and as the syllabus is issued some fifteen months before the examination, the time possible for preparation seldom exceeds a year, a circumstance which results only in cram and in making haste and scramble unavoidable. Such a syllabus has a cramping effect on the teacher's work—a much wider scheme is needed by pupils taking a four years' course. Detailed study is not undesirable, but it should be limited in amount, so as to leave opportunity for fairly extensive general reading. The "Oxford Treasury of English Literature" and the literature of the eighteenth (or any) century, though admirable subjects for students of maturity, who have some acquaintance with the broader characteristics of English literature, are totally unsuitable for Senior Local candidates.

The examination paper is not less open to censure than the syllabus. The framers of the syllabus appear to have little idea as to what constitutes a suitable course for such candidates, and the examiners by their questions encourage cramming, and to some considerable extent fail to appreciate the capacities of the candidates. In *Literature* questions such as the following occur almost annually:

What evidence as to date and composition of this play is afforded by its style and construction?

Sum up the evidence for fixing the date of the composition of the play.

This kind of study is not to be deprecated, but *intelligent* answers are possible only to those who have made a study of the chronological arrangement of all Shakespeare's work. The Oxford Senior candidate is encouraged to commit to memory (unintelligently in most cases) a few dry details to be found in any well-edited edition of the play to be studied, instead of concentrating his attention on the literary study of the play itself.

As other examples of the examiners' art take the following:

(*a*) "'Richard II.' is perhaps the most purely historical of Shakespeare's dramas." Discuss fully this statement.

This is a question on "Richard II." Can it be answered intelligently by anyone who does not possess a detailed knowledge of *all* the historical plays?

(*b*) Hakluyt's Voyages are "the prose epic of the modern English nation." Discuss fully this statement.

The voyages of Hawkins, Frobisher, and Drake were set, and on this scanty study candidates of sixteen to nineteen years of age must discuss fully this dictum of Froude's.

A single paper in *Literature of the Eighteenth Century* contains the following questions:

(*a*) Compare the political creed, and the style, of Burke and Bolingbroke.

(*b*) Give a short account of the literary position of Steele, Chatterton, Savage, Fielding, and Hume.

(*c*) On what grounds and with what justice has the eighteenth century been called the great age of English prose?

The absurdity of a syllabus which includes the "Literature of the Eighteenth Century" as one of four sections is only equalled by the inability of the examiners to appreciate the capacity of the youth of sixteen or eighteen. Apparently the candidate must be familiar with the political creed and the style of all writers of the eighteenth century, to say nothing of their literary position; and he must, according to the third question, be able to compare the prose literature of the eighteenth century with that of any other. In no other way can intelligent answers to these questions be given, and the requirement is most unreasonable.

The LONDON MATRICULATION syllabus includes:

(*a*) An essay—subjects may have reference to geography, history, English authors, or abstract subjects;

(*b*) Knowledge and command of English—précis, paraphrase, and analysis;

(*c*) General reading and knowledge of English books.

Little fault can be found with this syllabus, but the questions set in the examination show that the examiners do not realise its possibilities as a force in stimulating the study of literature on right lines. In addition to an essay, the paper in January last contained six questions, of which not more than five might be attempted. Assuming (not unreasonably) that four good answers would secure success, it is apparently possible to take the questions in précis, paraphrase, correction of sentences and literary forms, and to omit altogether the two questions in literature.

The examination is of the dry-as-dust order, but it secures good training in the practice and principles of English composition. Since literature forms so small a part of the paper, there is surely not room for such questions as the following:

(*a*) Write an account of the *friends* of one of the following: Addison, Johnson, Lamb.

(*b*) Classify and describe the most important periodical publications of the present day.

It is some of the *work* of Addison, &c., that matriculation candidates should be familiar with; acquaintance with the friends of these men will come later. These candidates do not read current periodicals; the more serious publications are for mature minds, and the others should not be recognised.

The MATRICULATION JOINT BOARD of Manchester, Liverpool, Leeds, and Sheffield Universities has laid down its syllabus on good lines, and, as a rule, the questions set are such as to induce intelligent study. Papers in English language and English literature are, however, alternative, and here also it is possible for a candidate to be successful without any knowledge of literature. Those who do take literature are required to prepare a play of Shakespeare, some poetry (*e.g.*, Milton's "Paradise Lost," i. and ii., or "The Golden Treasury," Book 4), and some prose (*e.g.*, Macaulay's "History," chap. iii., or Hakluyt's "Voyages"). There is system in the selection, but the weak point here, as in the University Locals, is that there is no guarantee of that general training in literature which should in all cases precede detailed study.

Clearly there is urgent necessity for reform in the English syllabuses of university examinations of matriculation standard, and it is equally imperative that the questions should be framed by men who have had experience in the work of teaching or examining pupils of matriculation age. The syllabus of all these examinations should be such as can be covered only by a wide course of reading extending over four or more years, and it should be broad enough to allow each school to plan its own course within certain limits set out below. This would make two things necessary, viz.:

(1) The cultivation of the power of expression; and

(2) The study of such works of English authors as are suited to the capacities and requirements of our pupils, that is to say, composition and literature would be equally important.

The COMPOSITION would include:

(1) An *Essay* on a suitable subject. This subject should be within the ordinary experience of the candidate, and it should call only on such stores of knowledge or on such powers of imagination as the candidate may reasonably be expected to have. Attention would be given to logical arrangement of ideas, suitability of language, proper use of the paragraph, and punctuation.

(2) *Paraphrase,* or training in thought-analysis.

(3) *Précis.*—Good practice could be obtained in summarising history, geography, &c.

(4) *Grammar.*—The aim would be not "a knowledge of verbal subtleties or logical inconsistencies," but to gain an instrument helpful in fashioning the structure of the language in which thoughts are expressed. Syntax and the meanings and uses of words would receive attention.

(5) *Some Training in Style.*—This would be secured incidentally in the early years of the course by comparison of the works of various authors. Great care should be taken to guard against inflation—content is always more important than form.

In Literature the general aim would be to gain first-hand knowledge of as much English literature as the young mind can be taught to appreciate.

To this end there would be required:

(1) *Poetry* on systematic lines of some kind, *e.g.*—

(*a*) Ballads, narrative poetry, lyrics, and so on to higher forms;

(*b*) An anthology, such as "The Golden Treasury," which "reflects the natural growth and evolution of our poetry."

(2) *Prose,* including—

(*a*) Classical tales and legends (*e.g.*, those of Greece and Rome, the Northern Sagas, &c.), followed by

(*b*) Suitable essays, such as those of Addison, Steele, Lamb, Hazlitt, Macaulay, &c.;

(*c*) Travel, biography, comedies;

(*d*) Standard novels, *e.g.*, those of Stevenson, Dickens, Scott, Goldsmith, Thackeray, George Eliot, &c. These would be taken as independent study by pupils at home, with occasional talks in the class-room. (A fair amount of ground can be covered if one or two are set each term.)

(3) *Shakespeare.*

At least a dozen plays should be read during the four years, but only general knowledge would be required—that which can be gained from the text itself with the help of the teacher.

(4) *Detailed study* of one or two works, such as one of Shakespeare's plays or some of the poems of Milton, Tennyson, or other standard author. This would be set twelve months in advance, and could therefore be taken only by pupils in the last year of the course.

Such a syllabus would rightly allow considerable diversity of curriculum in literature, and the examiners would recognise this by giving wide choice in questions. The examination paper would be divided into two parts. Of these the first would include an essay, and would also test the candidate's knowledge of the principles of composition; it would therefore be very much on the lines of the present paper in English of the London Matriculation examination: the second would test the extent of the candidate's knowledge of literature, and would include several questions under each of the four heads named above, in which respect the Board of Education has already given the lead in the literature paper of the Preliminary Certificate examination, an admirable example of a paper set by men who know not only the subject but the capacity and attainments of the candidates.

An examination of this kind would, I think, be acceptable to secondary schools, and it ought to be welcomed by the universities themselves, in that it would provide them with students having some power of self-expression and such general knowledge of English literature as would give fuller meaning to higher university study.

EXAMINATIONS.[1]

By Prof. G. H. Bryan, Sc.D., F.R.S.

II.

In my first article I gave the following list of qualities in a candidate which could be tested by an examination. The list is here repeated for reference.

1. The range of knowledge which the candidate has covered
2. His power of memorising.
3. His diligence and industry.
4. His clear understanding of what he has learnt.
5. His power of expressing his ideas clearly and intelligently, and his neatness of work.
6. His accuracy, notably in points of detail.
7. His powers of applying his knowledge to practical applications.
8. His "common sense."
9. His due sense of proportion in appreciating the relative value and importance of different parts of his work.
10. His reasoning power.
11. His intuition.
12. His ability to see at a glance what a statement means.
13. His competence to deal with unexpected emergencies and to select the best methods for the purpose.
14. His perseverance in completing to the bitter end a task which he has commenced, and not being baffled by difficulties.
15. His versatility and power of changing from one subject to another at short notice.
16. His rapidity of working.
17. His powers of physical endurance and presence of mind.

The question was also discussed of the relative value of easy and difficult questions. The present article deals with the remaining points selected for discussion, namely, aids to memory, number of questions in the paper, method of assigning marks, and maintenance of continuity.

II. The Question of Aids to Memory.—Such aids may take the form of lists of formulæ and facts specially printed for each examination or the "Open Book." Tables of formulæ are particularly useful in the case of engineering

[1] The first part appeared in The School World for May, 1910.

students, who require to evaluate integrals in their calculations, but do not require to go through the algebraical drill of proving the formulæ. A man who has to perform calculations in actual life will have books to refer to. Why should he not have them in an examination which is to qualify him for his future career? There are many difficulties about the open book system, and the questions arise whether—

(*a*) Should candidates be required to bring prescribed text-books?

(*b*) Should they have free choice of what books they bring in?

(*c*) Should they bring manuscript notes?

Evidently alternative (*a*) is the best where all the candidates have studied under the same teacher and used the same book. An examiner, moreover, has the advantage of being able to refer candidates to particular pages in setting his question paper. Moreover, if it is certain that all candidates will have to use the same book, the method can be extended to other examinations. There would, however, be grave objections if in "Local examinations" candidates were required to bring copies of text-books published by the "Press" belonging to the same University. There have been quite sufficient complaints about the relations between University Presses and Local Examination Boards, even under existing conditions.

I must say that alternative (*b*) presents difficulties of many kinds. For example, a candidate might bring a large pile of books with him and even then find he had left at home the very one he most wanted. In every examination there is a small but fairly constant percentage of candidates who forget to comply with some instruction or send up answers in wrong books; and here a new source of error would be introduced.

Alternative (*c*) presents many advantages, especially if the note-books are handed over to the examiner at the close of the examination. This plan is used in examinations in physics, and it enables the examiner to obtain better evidence of the candidate's qualifications, in particular in Nos. 1, 3, 4, 5, 6, than can be obtained from the answers to a three hours' paper alone. But it would be necessary even with a moderate number of candidates to limit the size of the note-books—and candidates will use bulky ones in heavy covers if they can—and in examinations so large that even now the two halves of a paper are marked by different examiners, the plan is obviously unworkable.

Except for practical difficulties there is much to be said for the open book system, and doubtless much against it. I consider that printed lists of formulæ in mathematics and corresponding statistics in other subjects—*e.g.*, dates in history—may meet the difficulty, and moreover a great deal may be done by an examiner in including in his questions such information as candidates would naturally obtain from books if they had to answer the questions for practical purposes. This, of course, makes the papers longer; but you cannot have everything. It is a little difficult to say what explanations should be given. I once set a crane question: the men did it all right, but the women did not know what a crane was, and though they might have obtained from the context sufficient information to solve the question, they failed to do so.

III. THE NUMBER OF QUESTIONS IN THE PAPER.—Here the great difficulty is for the examiner to get candidates to do what he wants. If he sets a lot of questions and leaves it to the judgment of candidates how many they shall attempt, he incurs the risk of having to wade through three books of illegible writing containing scraps of a lot of questions, and nothing finished. The candidates will be mostly writing when the bell rings, and will make no attempt to revise their answers, thus trying to put on an extra two marks and losing twenty that they might have saved.

If twelve questions are set and only eight are to be attempted, it may turn out that the candidates could easily have done more or that eight is too many. Moreover, a candidate who answers only eight questions has got to read through all twelve—a considerable task in many cases—or else he makes the uncomfortable discovery, when it is too late, that he has made a bad choice and he thinks that he would have done twice as well if he had chosen other questions. If the questions could all be made short, this difficulty would be obviated; but it is very difficult to obtain *practical* questions that are not long-winded when they are explained sufficiently to be intelligible to the candidates.

Moreover, an instruction to attempt not more than eight is usually construed into meaning also not less than eight, with the result that the candidate who could pass on three questions feels impelled to send up a lot of attempts which do more harm than good. I consider that with the number of questions limited, there is danger of an inversion in the order of merit of the top candidates. If one could only frame an instruction that would leave candidates freedom of choice as regards the number of questions attempted and yet encourage them to do a few questions well, this would be a great advantage. But it is a mistake to set too many instructions on a paper; and one is reminded of the examiner who set such elaborate instructions that he quite forgot the questions!

On the whole I believe that the best work is obtained by making the papers short, only setting as many questions as could be answered in the time, making them of such an easy character that no one shall be unduly penalised by forgetting trifling details, and paying great attention to such matters as accuracy, neatness of style, &c. In cases where to my knowledge the number of questions on papers has been reduced from twelve to ten, eight, or even six, there has been invariably a marked improvement of the work with each reduction.

IV. THE METHOD OF ASSIGNING MARKS.—The

usual rule is that 100 shall be the "Maximum Mark" given to a paper, and that this 100 shall be divided into watertight compartments representing the maximum marks awarded to individual questions. That no candidate shall receive more than the maximum is a law of the Medes and Persians. Now, in mathematics a brilliant boy may double the marks of the one next below him, whereas in a subject like history or English composition there may be no very wide difference between the best and worst candidate. The result frequently is that, barring the one genius, the marks in mathematics are very low compared with those in other subjects, and it does not pay to take mathematics.

The mistake that is made is in taking the "Maximum Mark" as the landmark in the scale of marks. The proper landmark to be taken is the average mark. The work of the best candidate necessarily fluctuates from year to year, whereas the attainments of the average candidates remain much more nearly constant. If the average candidate obtains 50, what does it matter whether the exceptional one gets 75 or 150, or even 200? This exceptional mark enables a comparison to be made between different years, and if the second boy in one year is better than the top boy in another, the mark shows it, and he is not handicapped for life to the extent that he would otherwise be.

To secure a uniform standard, examiners in different subjects sometimes "adjust their marks to a common average." This means that the papers are marked and the average taken: if this is too high or too low, the answers are again gone over, taking off or adding marks here and there until the required average is obtained. If the marks run high, more marks may be given for hard and less for easy questions, and conversely if the marks run low. This plan is liable, however, to produce reversal of the order of merit. Moreover, if no question on the paper is attempted by more than half of the candidates, no adjustment can produce an average of as much as 50 per cent.; if more than half the candidates get correct answers to every question, it is equally impossible to get a correct average as low as 50 per cent. This method is closely analogous to that of arranging masses at different given points on a line of limited length, so that their centre of gravity shall occupy a particular position: if the points are all on the same side of the centre of gravity this is impossible, and in any case a large shifting about of the masses produces only a small shifting of the centre of gravity. All this trouble is entirely due to fetish-worship of the maximum mark. But for this a *pro rata* increase or decrease could be made with the use of a slide rule.

A further objection arises when the same candidates have to take two papers in one subject. It frequently happens if one is a morning and the other an afternoon paper that the marks run high in one and low in the other. To adjust the averages, *keeping the maxima equal,* the examiners must adopt different scales of assessment of the morning and afternoon work. This, again, may lead to inversion of the order of merit.

The use of the "maximum" standard is still more unfortunate when the marking of individual questions is considered. Take the case of the candidate who solves the right-angled triangle question by the $\sqrt{\{s(s-a)(s-b)(s-c)\}}$ formula and gets the right answer. He has actually done all that is asked of him, and it is very difficult to see how he can be refused full marks. But another candidate sends up a beautifully neat and simple solution, and there is no comparing the two. He cannot receive more than full marks; consequently the two are marked equally and a serious injustice is done to the better candidate. The two candidates differ materially in respect of the qualities numbered 4, 5, 8, 9, 11, 12, 13.

Now take the case of a long question in several (say three) parts. The pupil who works it through to the bitter end has probably given more time and thought to it than the scrappy worker who does bits here and there. Is it not only just that the completely answered question should receive marks in excess of the sum of those awarded to the scraps of which it is made up? The difficulty would disappear at once if average marks were made the basis of assessment. We should then assign certain marks to correct answers of average quality and to parts of questions; we should mark completely answered questions on a higher scale, raising the marks further for any special evidence of ability in the answers. And candidates would no longer feel the inducement for scrambling for marks by scribbling scrappy attempts.

Some examiners adopt a system of merit marks, but here again the inexorable maximum gives trouble. For in order to award 10 marks as a bonus, the actual total marks on the questions themselves must be reduced to 90, and the average mark may suffer accordingly. The question also arises whether "minus" marks should be given for serious "howlers." It is surely more meritorious to leave a question undone than to send up a hopelessly incorrect attempt. The candidate who submits no attempt at least knows more than the other candidate, because he knows his own ignorance. The other "thinks he is wise when he is not," as Socrates puts it. I suppose a common way of avoiding the use of minus marks, and producing an equivalent effect, is by applying a severer standard of marking to other answers of the same candidate. This plan is probably perfectly justifiable.

A possible method of assessment would be to take the marks a candidate gains and subtract the marks he tries for and fails to obtain. If he tries for m marks and gains n of them, his index-mark would then be $2n-m$. Another index might be the total mark multiplied by the percentage gained on the questions tried, or n^2/m. Unfortunately, according to either of these plans, if two candidates had answered four questions equally well, and one had attempted a little bit of a fifth, the latter would suffer, though the attempt was all right so far as it went.

The trouble is to find a really *practicable* plan. Meanwhile the fact remains that in *most* instances good and bad candidates find their correct place in the order of merit without the examiner going out of his way to reward or punish them. And it must not be forgotten that even the best candidates are not infallible.

V. CONTINUITY.—This is now maintained by the new examiner seeing the questions set in previous years, and he sometimes can, if he wishes, see some of the scripts as well. This plan does not altogether obviate discontinuity when a change of examiners takes place. If there are two examiners who change alternately the matter is simple. I would suggest that in other cases when a change occurs the outgoing examiner should set the papers and the incoming one mark the scripts.

In spite of the length of this essay, many points have been left untouched; *e.g.*, whether the results of examinations should be issued in the form of a pass-list, in three classes, or in order of merit. I believe it is high time that these and other matters should be discussed, and that the discussion should not be confined to the single subject of mathematics. I believe that examinations are capable of exercising an important educational influence in the formation of character, but that they have their abuses as well as their uses, and very commonly they do harm instead of good. And while inviting discussion, I suggest that the principal points requiring reform are, first, that quality rather than quantity of work should be regarded as the essential test, and second, that the limitation of the "Maximum Mark" is an arbitrary and artificial restriction which should be abolished.

NOTES ON GERMAN EDUCATION.

From A CORRESPONDENT.

THE position of the Realschule and the selection of provincial school inspectors are giving rise to an important discussion in Austria. The Realschule, ranking after and not parallel with the other secondary schools, has been the Cinderella of the educational system. A supplementary examination has been imposed on its pupils as a condition of attending university courses, and its headmasters have usually been classical men. When a new secondary school has been established official influence has always been in favour of a Gymnasium, and gossip says that a sure way to promotion has been to abuse the Realschule and its pretensions. In spite of official disfavour the number of Realschüler approximates to that of the Gymnasiasten (in normal circumstances a ratio of 4 : 1 is usual), and, this being the case, a demand is made for independent representation of the Realschule at the Board of Education in Vienna, where the administrative posts have been monopolised by the classical *régime*.

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ALONG with this demand goes another for the reorganisation of the inspectorate. The inspectors take delight in overburdening the teacher with returns, and endeavour to neutralise his personality. The establishment of pleasant relations between teacher and pupil is not favoured by the inspectorate, which regards with hostility any attempt to balance the relations of mind and body. Prodigal of blame, they irritate the teacher, who, in turn, blames his class, only to feel the reaction of the parents, which never reaches the inspector. To overcome these difficulties it is proposed that the provincial inspectorate should be abolished and replaced by a system of Fach-Inspektoren, under the control of the Board in Vienna. In this manner the Realschule will be still further liberated from the tyranny of the Gymnasium.

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AT the Conference of the Austrian Association for School Reform last year, a prominent place was assigned to J. C. Barolin, of whose speech the official report gave a summary only. The full account is now published under the title "Der Schulstaat" (Vienna: W. Braumüller.) It imitates in many respects the scheme of Comenius as given in his Great Didactic, and suggests a beautifully rounded and systematic course of education between the ages of four and twenty-four. In spite of its Utopian character the book breaks new ground, and incidentally throws light on the agitation for school reform in Austria, which is one of the most suggestive movements in education on the Continent.

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FOR some time there has been a danger lest the Neuhof, near Birr, the scene of Pestalozzi's labours in Aargau, should fall into the hands of building speculators. To prevent this a committee has been formed to raise funds for the purchase and equipment of the estate as a training ground for young people. Towards the outlay of 260,000 francs the Federal Government has subscribed 60,000 and the Canton of Aargau 10,000. Other large subscriptions have been made by private persons and societies, so that there is good hope that the Neuhof, like the Rütli, will soon be a national possession.

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A SUPPLEMENTARY training course for teachers in technical continuation schools is to be held at Zürich in July and August, under the direction of the Swiss Society of Zeichen- und Gewerbelehrer. This course, the first of its kind in Switzerland, will combine instruction in business correspondence and practice with visits to factories and laboratories, and a course of lectures on science as applied to the industries. It is an outcome of the Federal circular of December, 1908, which recommended additional attention to the training of the teacher of continuation classes.

* * *

THE German Association for School Reform, which was founded in October 1908, to promote the co-operation of home and school in the physical and mental welfare of young people, has issued

a general statement of its purposes. These include demonstration of the necessity for school reform, the collection and circulation of results derived from child-study, the investigation of experiments relating to the self-activity of the child, and the foundation and support of experimental schools. The council proposes to issue periodical reports on the information collected, to keep local committees abreast of recent literature, to form a library, and to select subjects for investigation by local committees.

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The following extracts from a recent speech by Dr. Kerschensteiner are of interest to mathematical readers:

In our secondary schools mathematical teaching has always been characterised by a clearer aim than science teaching, but the methods employed are often obsolete and abhorrent. Any practical training of the intellect and all examples bearing on common events have been taboo. As in Latin and Greek instruction, reliance has been placed on scholastic methods exclusively. Algebra and geometry need to be liberated from the old subtleties (Spitzfindigkeiten): the power of forming a mathematical conception of surrounding phenomena must be developed, and a common bond must destroy the old compartmental divisions. Klein has proposed the idea of the function as this common bond, and the habit of "functional thinking" as the special aim of mathematical training. It is the peculiar habit of young people to ignore this idea, and it is the peculiar province of mathematics and natural science to correct the bad habit. These studies place concrete examples of functional forms before the pupil, who, by careful study of them, arrives at convictions which add to his strength the judgment which determines success.

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The League of School Reformers in Hesse puts forward the following aims:

(1) To ensure a more definite participation of the parent in the determination of the public education of his offspring.

(2) To extend the idea of the unity of national education, *i.e.*, to teach that the determining factor in the promotion of pupils to higher schools should be pedagogic principles and not social prejudices.

(3) To recast the existing Berechtigungswesen (system of privileges).

(4) To watch reform projects and to promote those which are anti-bureaucratic. To support the teaching of civics and the liberation of the school from sectarian influence.

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An important manifesto dealing with secondary schools comes from Munich. It abandons the demand for the uniform secondary school (Einheitsmittelschule), and seeks to arrange secondary education on a basis of modified specialisation. It is proposed to classify schools as Gymnasien, Realgymnasien, and Oberrealschulen; and curricula as classical, modern language, and mathematical-scientific. Each school would adopt one of the curricula as a speciality and group all instruction round it. It would also teach such portions of the other curricula as bore on its work or formed part of a general education. But the pupil would be regarded, in these subsidiary subjects, as an interested tourist, not as a prospective settler or the explorer of hinterlands. The traditional curricula would also suffer changes. Neither systematic completeness nor the acquisition of memorised material is aimed at, but rather knowledge of method, development of insight, and encouragement of independent work. In the upper classes pupils would be taught how to use their leisure, either with their hobbies or at games; that is, the mind would be trained instead of being filled. In order to postpone the age for choosing a profession, it is proposed to make transfer from one school to the other easy in the junior classes. But there is to be no relaxation of conditions to help the idle or incapable. For them, as ever, elimination at the early stages is still inevitable.

EDUCATIONAL NOTES FROM FRANCE.

By Jeanne Morin.

When, lately, Paris University opened its doors to a distinguished foreign speaker, it was a bold but profitable step, appreciated both by the foreigners and the French. While standing in the big hall at the Sorbonne, Mr. Roosevelt said, "I feel deep emotion in speaking in such an old University, founded two centuries before the discovery of America!" It was strange indeed to hear the representative of the New World teach the inhabitants of the Old. The lecture delivered by the ex-President of the United States sounded like a sermon; however, it was listened to with good humour by the fortunate listeners who had succeeded in entering the amphitheatre. Among the various duties of the citizen of which Mr. Roosevelt spoke in his lecture, he emphasised the necessity of having strong, healthy children, well brought up; for the welfare of a republic depends on the morality of the many, and not on the high standard of the few. This strong conviction made him eloquent, and he expressed himself in clear, picturesque language. Moreover, his brown face and energetic appearance impressed the audience favourably. Like a practised speaker, Mr. Roosevelt watched "son public," and when he realised from some puzzled faces that he had not made himself clear, he ventured to repeat the same thoughts in our language with a great deal of gesticulation. Amused, the audience thanked him by thundering applause.

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Le Congrès de l'Enseignement Secondaire held a series of educational conferences recently. They were held in la Salle des Fêtes du Lycée Louis le Grand. Every academy sent a professor of repute, and in a public meeting teachers from all over France met together and discussed a question of keen interest, namely, "Discipline in the High School." Everywhere it becomes more and

more difficult to keep children in a right spirit of obedience. The feeling of respect for authority is unknown to the rising generation. Besides, in France, it seems to all young people to be rather a clever thing to mock at authority, and this trait of the national character is one of the many stumbling-blocks in the way of discipline. At one time children were harshly treated; but now they are too leniently dealt with, and so they assert themselves with a boldness which horrifies old people accustomed in their youth to extreme deference. Our pupils breathe scepticism from the air around them, and when their teacher speaks of high ideals, they look at him as if he were a poor lunatic and laugh up their sleeves. Naturally the pupils care for work less than ever, and so they turn out young men interested in nothing but their own pleasure. To prevent such dangers, children should not only be taught, but they should be forced to keep the rules imposed upon them. Now when pupils of high schools misbehave, they are sent to "La Consigne," that is to say, they come back to school on Thursday and Sunday to do extra work, but as a matter of fact they spend the time in reading novels, for the "surveillant" requires of them nothing but peace. The way of impressing the idea of duty on a child's mind is to force the culprit to do well what he has done badly. When the pupil finds that the breaking of a rule invariably involves punishment he is well prepared to face the hard discipline of life.

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IN order to ensure a measure of education for all, the Ministre de l'instruction publique has just decided that no child may leave school, even if able to pass *le certificat d'études,* until he is twelve years of age, instead of eleven as formerly. Another *decret* recently issued by the Minister for the benefit of teachers permits, besides the usual holidays, two weeks' holiday to public teachers having delivered lectures or opened evening courses for adults; and two months' *congés de maternité,* with full salary, which does not prevent mistresses from enjoying six months' rest if taken ill. The decree relative to *le professorat adjoint* in secondary teaching has aroused the jealousy of the universities. The teachers in high schools, whose work is just to watch over children, wish to enjoy the same advantages as professors. Their claims have caused much uneasiness. Prof. Crouzet put the case well when he said: "Teachers who desire to participate in high teaching, and be looked upon as professors, should work like them and pass the same high examinations."

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THE educational world has talked much about medical inspection. Parliament will have soon to vote on this question. The project of our Board of Education concerns both public and private schools. It is proposed to appoint physicians, whose chief duties would be to look after the children's health. First, they would see that the surroundings of pupils helped towards their physical development, and sheltered them from infectious diseases, especially tuberculosis. Too often mere neglect has caused terrible illness. Desks the sizes of which are not regulated according to the height of the children provoke myopia, bad respiration, and so on. The times and menus of meals depend only on routine, but should be the object of careful study. Several times a year pupils should be thoroughly examined—especially their teeth, ears, eyes, lungs—and instructions should be given so as to remedy defects. The results of medical examinations should be written down in a special book kept for each pupil. The importance of this record in watching the physical and moral development of the child, and providing a diagnosis when he is taken ill suddenly, is clear. Yet it is not certain whether Parliament will pass the measure; but already in Paris and other big towns, the authorities manage themselves to have doctors, even in the primary schools, and it is hoped that schools all over France soon will have doctors to look after the children's health and nurses to superintend cleanliness.

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IN this age of scholarships, the Government generously affords free education in the high schools to clever children whose aptitude has been tested by special examination, and many poor pupils all over France take advantage thereof. There are scholarships due to benefactors. Each year Mr. Albert Kahn gives 33,000 francs to two young men in order that they may go round the world; two young women get only 17,000 francs to visit America. Another generous man has granted 1,000 to 3,000 francs to students anxious to study in foreign universities. These attempts to facilitate good feeling and mutual understanding between the people of France and other countries are numerous. Lately newspapers have spoken a great deal of the undertaking of Madame de Jouvenel, one of our most charming Parisian ladies, who has created a kind of *fédération du travail et de l'assistance.* It happens, too, frequently that employers desire labour and workers desire employment. In the case of governesses and nurses wanting to go to foreign countries, Madame de Jouvenel finds out good families where they may safely teach. The Office international, 1, Rue de la Trinité, Paris, aims at the same object in placing children during holidays in foreign families where they are well cared for and have many opportunities of learning the language. Everywhere during the summer holidays they try in one way or another to facilitate the mastery of languages. In France many universities, such as Paris, Nancy, Dijon, Grenoble, have special courses for foreigners. Many visitors from England, Germany, &c., go to the south of our country in search of sun and warmth, so in the beautiful town of Montpellier special courses are arranged for them. Twice a week there are theoretical and practical lessons on pronunciation. Students of the same countries study together, as their difficulties prove the same, and by special instruments they are shown their mistakes and

the way of correcting them. Lectures on history and geography are illustrated by lantern slides, so that the audience may understand better. Besides the usual literature course, a professor lectures on "la littérature provençale"—close to the country of Mireille "la langue du poète Mistral" could not be forgotten.

PERSONAL PARAGRAPHS.

"ONLOOKER" loses a near neighbour in Mr. Cormell Price, who died early in May. He was at Haileybury, as head of the Modern School, from 1863 to 1874. He left Haileybury to take up the headmastership of the United Services' College, Westward Ho, and held this office until 1894. He was seventy-four at his death. His memory is likely to endure for some time as "The Prooshian Bates" of Kipling's "Stalky and Co." In this character Mr. Price is slightly idealised, but he was very much the man depicted by Kipling. It is sad that a man of mark like Mr. Price should live his last years in broken circumstances as well as in broken health. Mr. E. H. Blakeney writes to *The Times* a sympathetic obituary notice of Cormell Price, in which he points out that not only was he an exemplary headmaster, but also possessed a literary and artistic side, and was the close personal friend of William Morris and Edward Burne-Jones. In very early days he ventured to prophesy for "young Kipling" a distinguished place among our best writers.

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DR. JOSEPH WOOD is to retire from the headmastership of Harrow at the end of this term, in his sixty-ninth year, after forty-three years of schoolmastering. He was head of Leamington College for twenty years, and of Tonbridge School for eight, before he succeeded Dr. Welldon in 1898. He is a popular headmaster.

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To the rectorship of Edinburgh Academy has been appointed Mr. R. H. Ferard, one of H.M. Inspectors of Secondary Schools since 1905. He was educated at Eton and Exeter College, Oxford, and took a first in "Mods" and second in "Greats." For twelve years he was tutor of Keble College.

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IN his eighty-third year recently died Dr. David Henderson Paton, Rector Emeritus of the High School of Glasgow. He was a student of St. Andrews, and had been successively Rector of Banff Academy, Rector of the High School of Stirling, and Rector of the High School of Glasgow. He retired in 1901.

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THE governors of Giggleswick School have this time selected for their headmaster a man with athletic qualifications, Mr. Robert N. Douglas, who has been a master at Uppingham since 1892, and is the son of Sir Robert K. Douglas. He was educated at Dulwich College and Selwyn, Cambridge, and got his "blue" for both cricket and Rugby football.

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MISS DAY, who has done valuable work for thirty-six years as headmistress of the Grey Coat Hospital (girls' secondary) School, is to retire in July next. The school was founded in 1698, and the original Elizabethan building in Westminster is still used for the school premises, and is eagerly visited by folk with antiquarian interests.

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THE REV. DR. CHARLES HENRY WALLER, formerly principal of St. John's Hall, Highbury, died early in May. He had retired from his office in 1898, and was in his seventieth year. He was a scholar of University College, Oxford, where he obtained a first in classical, and a second in mathematical "Mods," graduating in 1863 with a second in Lit. Hum., and a third in mathematical finals. In 1865 he began work at the London College of Divinity, and succeeded Dr. Boultbee as principal in 1882.

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THE REV. DR. W. W. MERRY is to be succeeded as Public Orator at Oxford by Mr. Alfred Denis Godley, fellow and tutor of Magdalen College. Mr. Godley, who is well known to many generations of Oxonians, had acted as deputy to Dr. Berry in the years 1904–6. He was at Harrow under the present master of Trinity, Cambridge, and had a distinguished career as an undergraduate. He has been tutor and fellow of Magdalen since 1883, and has been busy in the University as an examiner and member of boards and committees. Among his more strictly classical works are an edition of Tacitus' Histories, a skilful translation of the Odes of Horace, and his share in the "Nova Anthologia Oxoniensis," in which work he joined Prof. Robinson Ellis. He has written besides "Aspects of Modern Oxford" and "Oxford in the Eighteenth Century," recently published. "Onlooker" had the satisfaction of serving on the editorial committee of the *Oxford Magazine* when Mr. Godley was editor. To that periodical "A. G." has contributed a large proportion of what is bright and witty. "Verses to Order" and "Lyra Frivola" contain some of his selected light verse, and mark their author as a likely editor of W. M. Praed.

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MR. ALBERT KAHN, of Paris, has recently made provision for the establishment in the British Isles of two fellowships similar in character to the *bourses de voyage* he has founded in several other countries. Each of these "A.K. Travelling Fellowships" is of the value of £660, £600 to be expended in defraying travelling expenses, and £60 in the purchase of books and souvenirs. At the expiration of the fellowship, the fellow is required to prepare a report, not exceeding fifty printed pages in length, giving his impression of the countries visited. These travels are not to be regarded as mere pleasure trips, but as means

to the acquisition of knowledge and experience which will be of use in the fellow's career as teacher, scholar, or investigator. The trust is to be permanently associated with the University of London. The idea is very similar, although on a more extended scale, to that of the Schoolmasters' "Grace Term," which was mentioned last month in THE SCHOOL WORLD in connection with Mr. Winbolt's article in *The Times*. I quote the first of the provisions of the trust deed as printed in *The Times:* "1. The object of the founder is to promote the advancement of education and instruction by founding and endowing fellowships to be called the A.K. Travelling Fellowships, and to be of sufficient value to enable the holders of the fellowships who shall be British subjects graduates of or persons who have passed the examinations required for a degree in some university in the United Kingdom to travel for at least one year in such foreign countries as the trustees shall generally by regulation or in special cases determine, so that by the study and comparison of national manners and customs and of the political, social, religious, and economic institutions of other countries such persons may become better qualified to teach and to take part in the instruction and education of their fellow-countrymen." Women as well as men are to be eligible for election to these fellowships.

ONLOOKER.

THE TRAINING OF SECONDARY-SCHOOL TEACHERS.[1]

THE Department of Education for India has the question of the training of the teachers of its high schools under consideration, and as a preliminary to action it has inquired into the position in England, Germany, and the United States. The report of its commission has lately been published, and, apart altogether from its value to the Government in whose interest the inquiry was made, Mr. James has rendered an important service to the cause in our own country by his able and judicious statement of the actual position here. Although there has been considerable delay in the issue of his report—his prefatory note is dated October, 1907, whilst the date of publication is 1909—and some noteworthy things have happened in the interval, his review contains the most complete statement of the actual provision for the training of secondary-school teachers in our country which has hitherto appeared.

It will come as a surprise to most people to learn that "the only country in Europe which has an organisation for the training of secondary-school teachers at all comparable in completeness with that now existing in England is Prussia." The "plant" is here already. It has been steadily increasing in quantity since the self-sacrificing work of Miss Margaret Newman at the Ladies' College, Cheltenham, in 1877. It was just beginning to find a substantial amount of work and to have an appreciable "output," when the wreck of the Teachers' Register was announced. Mr. James tells with considerable effect the story of the disappointed hopes which that brought to all who believe in training. Nowhere was the practical result of the policy of the Board of Education felt more keenly than at Oxford, where in 1905 no fewer than fifty-four men passed through Mr. Keatinge's hands, whilst in 1907 there were less than twenty. It is unfortunate that the report should have stopped short just where it does, for although it records the precious undertaking of the Board "that should any scheme be proposed which would be beneficial and practical and satisfactory to the teaching profession as a whole, the Board would do their best to carry it out," it could not contain a record of that recent epoch-making conference when, in the presence of the permanent secretary to the Board, thirty-seven associations of teachers of all grades unanimously accepted a scheme for a register and a governing body to administer it. Of course, we are not out of the wood yet, but the reproach of disunion can no longer be hurled at the profession. It is for the State Department to say whether the scheme could be useful. The practicability of it was chiefly a question of harmonious acceptance. We may still hope that ultimate good will come from the ill-fortunes of the professional charter as it was first conceived.

Mr. James has done well to put on record the various ideas on the subject of training which are held by those engaged in the work. Not unnaturally there is very considerable difference of opinion amongst them. Thus, on the question of the relation of practice to theory, we find Prof. Lloyd Morgan urging the paramount importance of the theoretical preparation of the teacher for his profession. As he puts it, the students are doing in the practising schools what, if they become teachers, they will have to do all their lives. In university lecture-rooms they have an opportunity of being made familiar with ideas on education such as will never recur in an equal degree. At the opposite extreme are the advocates of the student-teacher system, who believe in the ounce of practice being worth a pound of theory. The balance of opinion emphasises the importance of actual practice, in close conjunction, however, with a carefully organised theoretical course. We do not find from the report that this question of practical training has been at all sufficiently thought out by those who direct it. It is true that students are told to "observe" good teachers, and "observe" children, and subsequently courses of lessons in their particular *Fächer* are assigned to them. These they are to prepare and to give to classes in the practising schools. But "observation" without very special direction is notoriously futile, and to give a course of lessons in any subject involves such a variety of technical devices, that it seems to demand further analysis. The Herbartian steps are inadequate on

[1] "The Training of Secondary Teachers." Occasional Report No. 5. Office of the Director-General of Education in India.

practical as well as on theoretical grounds, and we imagine most trainers have given them up, at any rate in the crude form in which they were used ten years ago. The technique of instruction demands more careful attention. So much attention has been given to the greater issues, to the doctrine of ultimate ends in education, that we may now look for more thought to be applied to the better organisation of the practical training in the work of the moment—instruction and the response thereto—its closer correlation with lecture courses. To say that lecture work and practical work should be in intimate association is one thing; to organise courses in which that is effectively accomplished is quite another.

In his discussion of the relation of theory to practice, Mr. James compares the student-teacher method with that of the Prussian Gymnasial Seminar, but he quite overlooks the important fact that the men in the Seminar have already attended university courses in pedagogy and philosophy, and, moreover, have satisfied the State examiners in that subject, which, along with German, constitutes the general part of the *Staats-Prüfung* for all who desire to become teachers in the higher schools of Prussia. The fact is clearly stated in another report by Mr. Sharp which is included in the volume, but it is very commonly overlooked in current controversy.

One of the advantages to be derived from a report of the kind under review lies in the fact that it reveals the gaps in our armour. Of these there are many, and perhaps the best way to convert the headmasters who are as yet unsympathetic to training is to set our hands to the task of a business-like organisation of the methods of attacking the problem. It has been said often enough that a man will get most out of training after a few years' experience of class-room work, and the testimony of men like Mr. Arthur Sidgwick is cited as a case in point. The primary training colleges are almost unanimous in refusing to admit to their colleges the inexperienced bursar. They have so much to do besides professional training that their demand for some school experience prior to admission to the colleges may be justified on that ground, but with the secondary-school teacher no difficulty of the kind exists. It does not therefore seem reasonable that methods of training should apparently appeal most strongly to those who are already practised hands. The novice should feel the point of what is being done. He should be let down gently, and take his technical exercises in an order determined by their relative simplicity. Here is a great problem of organisation in detail which needs to be worked out. Nothing of this appears in the report, for the simple reason that it has not yet been done in any satisfactory way.

At the same time there is so much of importance gathered together in this little volume that one cannot but express a wish that the Board of Education would circulate it amongst the training colleges of the country. No doubt there are abundant copies in the departmental cellars in Calcutta which could be had for the asking. It is probably too much to expect from a Department which actually does not send out copies of its own publications to the people who could make best use of them.

HISTORY OF SCOTTISH EDUCATION.[1]

OF the making of books on phases of Scottish educational history there seems no end. Mr. Coutt's great work on the "History of Glasgow University" has been followed at short intervals by Mr. Strong's "History of Secondary Education," and now by the present notable volume. The consciousness of nationality and the pride of race are, after a somewhat long sleep, once more mounting high in Scotland, and Scottish education and Scottish history seem likely to come into their own at last.

The present volume surveys in a comprehensive manner the whole field of national education from its humble beginnings in the twelfth century right down to the present day. Notwithstanding the extent of the ground covered, the author has succeeded in maintaining a just proportion and a right perspective throughout. Dr. Kerr, of course, has had unrivalled opportunities for dealing authoritatively with the subject. For more than fifty years he had a close and practical acquaintance with school and university life in Scotland, and since his retirement thirteen years ago from the position of Senior Chief Inspector of Schools he has devoted himself to the laborious work of investigating at first hand the various records dealing with Scottish education. As a consequence, we have a work of outstanding merit written in a free and lucid style, and full of interest from beginning to end. The plan of dealing with the various universities separately has led to a good deal of repetition, and some of the details given of present-day administration might well have been spared, but otherwise the work is flawless.

The picture of education that Dr. Kerr presents is one of strong lights and shades, notable advances alternating in kaleidoscopic fashion with notable declines. Thus in the middle of the fifteenth century we find the estimate of education fallen so low that it seemed as if schools were to disappear altogether from the land. The general attitude is well expressed by the great Earl of Angus, old Bell-the-Cat, who thanked God that "save Gawain son of mine could never spell a line." Yet some years later the Scottish Parliament, at the instigation of James IV., passed an Act ordaining that "barons and freeholders of substance should put their eldest sons or heirs to school from their being eight or nine years of age and remain at the grammar schools till they have perfect Latin." Defaulters were liable to a penalty of £20. Though there is no evidence of the enforcement of the penalty, still the mere fact of the passing of such a statute is proof of

[1] "Scottish Education." By Dr. John Kerr. xvi+442 pp. (Cambridge University Press.) 6s. net.

the wisdom and foresight of the King and his Parliament, and has no parallel in any other country at so early a period. The social position of the masters or rectors of the great schools of the period furnishes further evidence of the high place given to education and to educationists for some time prior to the Reformation. In authentic documents they are found associated with the royal princes and with the dignitaries of the Church in settling disputes of various kinds. Yet a hundred years later the grammar-school doctors, according to the records of many important burghs, were forced to go from house to house for "their meat of all the bairns day about."

It is pleasing to find that Dr. Kerr does ample justice to Andrew Melville as an educational reformer. Everyone has heard of Melville, the great ecclesiastic, who bearded James VI. and called him "God's silly vassal," but few know him as the great principal of Glasgow University who reorganised the curriculum on modern lines and "made the name of the college noble throughout all the land and in other countries also." Melville, indeed, both in Church politics and in education, has been overshadowed by Knox, yet his services to both are hardly less outstanding.

As might be expected of the author of "Memories Grave and Gay," Dr. Kerr has a keen eye for the humorous, and lights up many a page by quaint stories of "ye olden days." A specimen or two may be permitted. The teacher of a dame school, finding a pupil sticking at the long names in the Bible, said to her: "Just ye gang stracht on, Jeanie. Dinna mind hoo ye misca' them. *They're a' deid.*" Dr. Parr, of Norwich School, had boundless faith in the birch. An undermaster told him one day that a certain pupil was showing signs of genius. "Say you so," said Parr; "then begin to flog him to-morrow."

A valuable appendix dealing with different phases of present-day education, an admirable table of contents, and an exhaustive index greatly increase the value of the book.

THE GROWTH OF ETHICS.[1]

ONE thing comes out clearly from this book: the progressive degradation of philosophical phraseology. The reader will see that the very thought of it has spoilt our own style in the first sentence. With Socrates and Plato, words have meanings; they ask, Can virtue be taught? What is happiness? What are right and wrong? They discuss the nature of things, the fear of death dispelled, the One, the Good. But with the moderns, words are only tickets: they have no more relation to the natural thought of man than hydrochloric acid or gametes. In order to understand the moderns, one must learn to talk in a jargon of noemata and cognitions, of categoricals and psychologicals, of utilitarianisms, philosophical intuitionisms, universalistic hedonisms, culminating in idiopsychological ethics. Thank goodness, the author has spared us pragmatism.

We do not say this to make a cheap jest: we think it is really a serious matter. None of these philosophical terms can be understood without being fully explained and defined, and a great deal of what is said could also be said without using any but natural words. How many technicalities did Plato find to be necessary? Did not Berkeley carry out a subtle and acute argument in the language of intelligent men of the world? If so, why should not the philosophasters do the same? The reason is, partly that it is more difficult, partly that if they did some of their own arguments might seem to be perilously near nonsense.

Now to Mr. Rand's book. About one-quarter is ancient philosophy (down to Plotinus); a few pages are given to Augustine, Abelard, and Thomas Aquinas; the rest is modern, beginning with Hugo Grotius, and including Hobbes, Cudworth, More, Cumberland, Spinoza, Malebranche, Locke, Clarke, the Earl of Shaftesbury, de Mandeville, Wollaston, Joseph Butler, Francis Hutcheson, Hartley, Hume, Adam Smith, Helvetius, Paley, Bentham, Price, Reid, Kant, Fichte, Hegel, Schopenhauer, Bencke, Mill, Spencer, Sidgwick, Bradley, Green, Martineau. The book is a collection of typical passages, not a criticism.

The selection is wide, as we see. The subjects are ethical. It is impossible to say, of course, that the whole ground has been covered, but the topics of right and wrong and the end of man are well illustrated from many points of view. The student of philosophy will find this an extremely useful book; the educated man of the world will be interested, in spite of the technicalities. The Greek scholar may be puzzled what to make of διακώματα (p. 208, *i.e.*, δικαιώματα).

[1] "The Classical Moralists: Selections Illustrating Ethics from Socrates to Martineau." Compiled by Benjamin Rand. (Constable.) 10s. 6d. net.

MY EXPEDITION TO THE NORTH POLE, 1908–9.[1]

THE last North Polar Expedition of the Peary Arctic Club left New York Harbour on July 6th, 1908, in the steamer *Roosevelt*, built by the club especially for Arctic work, and commanded by Captain Robert A. Bartlett. The expedition reached Cape York on August 1st. In the Cape York, Etah, region, a little less than three weeks were spent selecting the best of the Eskimos to accompany me north, purchasing dogs, furs, and other items of equipment, killing walrus, and refilling the *Roosevelt* with coal.

On August 18th the *Roosevelt* steamed out of Etah to resume her voyage north. I had on board at this time 22 Eskimo men, 17 women, 10 children, 246 dogs, and some 40 walrus. Leaving Etah we proceeded, as usual, to Cape Sabine, forced our way, with frequent delays and interruption, through the usual heavy ice, past Cape Albert and Victoria Head; worked along under the Cape D'Urville, Hayes Point coast, then off Cape Fraser met clear water, which enabled us to steam north in the middle

[1] From a paper presented to the Royal Geographical Society on May 4th by Commander Robert E. Peary.

of the channel to Lady Franklin Bay. Here the ice forced us across to the Greenland coast at Thank God Harbour, whence we worked up past Cape Lupton, and from there north to Cape Union. From here we were drifted south some distance, but later took refuge under the north shore of Lincoln Bay.

Finally, on September 2nd, we squeezed around Cape Union and made fast in a shallow niche in the ice-foot; then, after some hours, we made another short run to Black Cape, and hung on to a grounded bit of ice. At last, a little after midnight of September 4th, we passed through a stream of extremely heavy running ice into open water, rounded Cape Rawson, and passed Cape Sheridan within a quarter of an hour of the same time we arrived three years before (7 a.m., September 5th).

An attempt was made to force the ship to Porter Bay under Cape Hecla for winter quarters, but was given up, and the place selected close to the delta point of the Sheridan River, a little north of our previous winter quarters. Here the *Roosevelt* was forced into the shallow water, unloaded, and carefully secured. Tidal observations were commenced at once, and the members of the crew constructed box houses on the shore as an emergency precaution; and the members of the expedition, with the Eskimos, began the transportation of supplies westward to Cape Columbia. This work, alternating with hunting, consumed the remainder of the time until November, at which time a large amount of supplies had been transported to Cape Columbia and to intermediate depôts at Cape Colon and Parry Peninsula.

The winter months were fully occupied on board the *Roosevelt* in making the equipments, sledges, harnesses, clothing, &c., for the sledge journey, and in the field during the period of moonlight in each month in hunting, in tidal observations at outer stations, and in continuing the work of transporting supplies to Cape Columbia.

On February 15th, 1909, Bartlett left the *Roosevelt* with the first division of the northern sledge party. Other members of the party followed on successive days with their division, and I brought up the rear on February 22nd with my division.

On the last day of February Bartlett, with his pioneer division, accompanied by Borup and his division, got away due north over the ice, and on March 1st the remainder of the party got away on Bartlett's trail, I following an hour later.

The party now comprised 7 members of the expedition, 17 Eskimos, 133 dogs, and 19 sledges. My marching formation for the expedition contemplated a lightly loaded, energetic advance or pioneer party, breaking a trail one day in advance of the main party; a compact main party, made up of unit divisions of four men each; and supporting parties, returning at intervals.

A strong easterly wind, drifting snow, and temperature in the minus fifties marked our departure from the camp at Cape Columbia, which I had christened Crane City. At the end of the fourth march, about 45 miles north of Columbia, we were held up six days by the "big lead" which marks the edge of the continental shelf. At noon of March 5th the sun, red, and shaped like a football by excessive refraction, just raised itself above the horizon for a few minutes, and then disappeared again. Beyond the "big lead," at the end of the seventh march, 84° 29′, Dr. Goodsell, MacMillan, and three Eskimos, with three sledges and teams, returned. A sounding here gave a depth of 825 fathoms.

The next five marches (three short ones with Henson in the lead, with some rough ice and several broken sledges, and two with Marvin in the lead) brought us to 85° 23′. From this point Borup turned back in command of the second supporting party. Here again, as before, the best Eskimos, dogs, and sledges were retained for the main party, and the load brought up to the standard.

The now continual daylight enabled me to make at this camp a modification in my march formation that brought my advance and main parties closer together, and reduced the likelihood of their being separated by open leads. Bartlett went to the front here again with his division, taking Henson and his division with him. Marvin and I with our divisions remained in camp twelve hours longer, and then followed. When we reached Bartlett's camp he turned out and went on, and we turned in. By this arrangement the advance party was travelling while the main party was asleep, and *vice versa*, and I was in touch with my advance party every twenty-four hours.

At the end of the second march in this section Marvin obtained a south latitude sight, which placed us at 85° 48′. This result agreed very satisfactorily with the dead reckoning of Marvin, Bartlett, and myself, and the positions of our camps up to this point were adjusted from this observation. Up to this time the slight altitude of the sun had rendered it not worth while to waste time or strain the eyes in observations.

At the end of the third march beyond here Marvin obtained another satisfactory sight for latitude, which gave our position as 86° 38′. This gave us a definitely measured record of 50′ of latitude made good in three marches. From this point Marvin turned back in command of the third supporting party.

With a more compact party and everyone increasing in fitness and training with each day, we were now in shape to do some record travelling, and should have made a great record in the next five marches, with Bartlett in the lead, but for two hostile occurrences: one, the cutting of a march in two, and a day's delay by the opening of an impassable lead; and, second, the occurrence of a strong northerly wind during two days, which crushed the ice southward and stole from us a number of our hard-earned miles.

The fifth march brought us close to the 88th parallel, unless the north wind had lost us several miles. The wind blew all night and all the following day. At this camp, in the morning, Bartlett started to walk five or six miles to the north to make sure of reaching the 88th parallel. Bartlett returned in time to take a satisfactory observation for latitude in clear weather, and obtained for our position 87° 48′. The observations completed and two copies made, one for him and the other for me, Bartlett started on the back trail in command of my fourth supporting party, with 2 Eskimos, 1 sledge, and 18 dogs. He had reason to take pride in the fact that he had bettered the Italian record by a degree and a quarter, and had covered a distance equal to the entire distance of the Italian expedition from Franz Josef Land to Cagni's farthest north.

With the disappearance of Bartlett I turned to the problem before me. This was what I had worked for during twenty-three years; for which I had lived the simple life; for which I had conserved all my energy on the upward trip; for which I had trained myself as for a race.

Now, in spite of my years, I felt in trim, fit for the demands of the coming days, and eager to be on the trail. As for my party, my equipment, and my supplies, I was in shape beyond my most sanguine dreams of earliest years. My party might be regarded as ideal, loyal, and

responsive to my will as the fingers of my right hand. My dogs were the very best, the pick of 133 with which we left Columbia. My sledges, now that the repairs were completed, were in good condition. My supplies were ample for forty days, and, with the reserve represented by the dogs themselves, could be made to last fifty.

Pacing back and forth in the lee of the pressure ridge where our igloos were built, while my men got their loads ready for the next marches, I settled on my programme. I should strain every nerve to make five marches of 25 miles each, crowding these marches in such a way as to bring us to the end of the fifth long enough before noon to permit the immediate taking of an observation for latitude.

At a little after midnight of April 1st, after a few hours of sound sleep, I hit the trail, leaving the others to break camp and follow. As I climbed the pressure ridge back of our igloos I set up another hole in my belt, the third since I started. Every man and dog of us was lean and flat-bellied as a board and as hard.

Up to this time I had intentionally kept in the extreme rear, in order to straighten out any complication that might occur, to encourage anyone that might be blue from the heavy going or a broken sledge, and to see that everything was drawing properly. Now I was in my proper place in the lead, and it was with a thrill of quickened blood and senses that I pressed on at the head of my little caravan. I set a good pace for about ten hours, which gave us 25 miles and took us well beyond the 88th parallel. While we were building our igloos a long lead formed to the east and south-east of us, at a distance of a few miles.

A few hours' sleep and we were on the trail again. The weather was fine, and the going like that of the previous day, except at the beginning, when pickaxes were required. This and a brief stop at another lead cut down our distance. But we made some 25 miles in ten hours, which put us halfway to the 89th parallel. Again a few hours of sleep, and we hit the trail before midnight. The weather and going were even better than before. The surface, except as interrupted by infrequent ridges, was as level as the glacial fringe from Cape Hecla to Cape Columbia, and harder. We marched something over ten hours, the dogs being often on the trot, and made 25 miles. Near the end of the march we rushed across a lead 100 yards wide, which buckled under our sledges, and finally broke as the last sledge left it.

We stopped in sight of the 89th parallel, in a temperature of 40° below zero. Again a scant sleep, and we were on our way once more, and across the 89th parallel. This march duplicated the previous one as to weather and going. The last few hours it was on young ice. Occasionally the dogs were galloping, and we made 25 miles or more. The air, the sky, and the bitter wind burning the face until it cracked, reminded me in this march of the great interior ice-cap of Greenland. Even the natives complained of the bitter air. It was as keen as frozen steel. A little longer sleep than the previous ones had to be taken here, as we were all in need of it.

On the following march the weather was thick, but it gave me no serious uneasiness, as before turning in I had taken a precautionary observation, which indicated our position as 89° 25′. A rise in temperature to 15° below zero reduced the friction of the sledges, and gave the dogs the appearance of having caught the spirits of the party. When we had covered, as I estimated, a good 15 miles, we halted, made tea, ate lunch, and rested the dogs. In twelve hours' actual travelling time we made 30 miles.

I had now made my five marches, and was in time for a hasty observation (at approximately local noon Columbia meridian) through a temporary break in the clouds, which indicated our position as 89° 57′. I quote an entry from my journal some hours later:

"The Pole at last! The prize of three centuries, my dream and goal for twenty years, mine at last! I cannot bring myself to realise it.

"It all seems so simple and commonplace. As Bartlett said when turning back, when speaking of his being in these exclusive regions, which no mortal had ever penetrated before:

"'It is just like every day!'"

When our igloos were completed we had our dinner, the dogs were double-rationed, and I wrote up my notes and went to sleep, while Henson and the Eskimos unloaded the sledges and got them in readiness for repairs, which I had instructed them to make during our stay here, so as to reduce the probability of delays from breakage on the return trip. Later they came in, and I turned out, to be in readiness for an observation at 6 p.m., Columbia meridian time. The sky was still overcast, but there were indications that it would clear before long; and after a little, I got out with my two men, and, with a light sledge, carrying only my instruments, drawn by a double team of dogs, I went on an estimated distance of 10 miles. It cleared while we were travelling, and I was able to get a satisfactory series of observations at Columbia meridian midnight, which observations indicated our position as being beyond the Pole.

I then returned to camp in time for another set of observations at 6 a.m. on April 7th, Columbia time, which indicated our position as west of the Pole (in reference to the Columbia meridian). I then, with a double team and light sledge, went east (in reference to the Columbia meridian) an estimated distance of 8 miles; returned to camp again in time for a final satisfactory series of observations at Columbia noon of the 7th.

As the result of these observations my flag was displayed, and photographs taken of it and of the party. No recent ice was observed in these trips or in the vicinity of the camp where a sounding could be made. Careful examination of the horizon in every direction with a telescope showed no indication of land or land clouds. The temperature at the time of our arrival, when the sky was overcast, was 11° F. below zero, as indicated by one of Green's minimum self-registering thermometers. When it cleared the temperature fell, and, at the time of our departure, the thermometer registered 33° F. below zero.

From about eight o'clock in the evening (Columbia meridian time) until the time of our departure the weather was clear and brilliant, with at times a light breeze from the westward (referred to Columbia meridian) just sufficient to straighten out my silk flag.

Leaving the camp about four o'clock of the afternoon of the 7th, we started on our return, having again double-fed the dogs, repaired the sledges for the last time, and discarded all our spare clothing to lighten the loads. Five miles from the Pole a narrow crack filled with recent ice, through which we were able to work a hole with a pickaxe, enabled me to make a sounding. All my wire, 1,500 fathoms, was sent down, but there was no bottom. In pulling up the wire it parted a few fathoms from the surface, and lead and wire went to the bottom. The first camp was reached in good time. After a few hours' sleep we hurried on again, Eskimos and dogs on the *qui vive*. I was anxious, if possible, to cover two outward marches on each of our return marches, which I believed we could

do, barring accidents, since we had a trail to follow, and would need to waste no time in making camp, as the igloos built on the outward journey could be reoccupied. At the next camp south we made tea and ate our lunch in the igloos, rested the dogs, and then pushed on again. It took all our will power to reach the next igloos, but we did it, and were asleep almost before we had finished our supper.

The next day was a wild one. When we awoke a strong north-north-east true wind was blowing with steadily increasing violence. Again, as on the previous day, we made the next camp, had lunch and hot tea in the igloos, rested the dogs, and then pushed on. When we arrived at Bartlett's igloos men and dogs were pretty nearly exhausted. At this camp the continuance of the gale gave us good reason for a fair sleep and rest. In the next march we covered only one march. From here on, however, with a few exceptions, we made two of our marches in one return.

Though Bartlett, Marvin, and, as I found out later, Borup, had been delayed by open leads, we probably, as the result of the northerly gale, were never delayed more than a couple of hours at a single lead. Sometimes the ice was fast and firm enough to carry us across; sometimes a short detour, sometimes a brief halt for the lead to close, sometimes an improvised ferry on an ice-cake, enabled us to cross and keep the trail without difficulty down to the tenth outward march.

There the trail disappeared completely, and the entire region was unrecognisable. Where on the outward journey had been narrow cracks, there were now broad leads, one of them more than five miles in width, caught over with young ice. Here again fortune favoured us, and no pronounced movement of the ice having taken place since Bartlett passed, we had his trail to follow. We picked up the old trail again north of the seventh igloos, followed it beyond the fifth, and at the big lead lost it finally. From here we followed Bartlett's trail, and on April 23rd our sledges passed up the vertical edge of the glacier fringe a little west of Cape Columbia. When the last sledge came up I thought my Eskimos had gone crazy. They yelled and sang and danced themselves exhausted. As Otah sat down on his sledge he remarked in Eskimo: "The devil is asleep or having trouble with his wife, or we never should have come back so easily."

A few hours later we arrived at Crane City, under the bluffs of Cape Columbia. Two days we spent here in sleeping and drying our clothes. Then for the ship. We reached Cape Hecla in one march of 45 miles, and the *Roosevelt* in another of equal length. When we got to the *Roosevelt* I was staggered by the news of the fatal mishap to Marvin, who had been drowned at the "big lead" while hastening back at the head of his supporting party. He had been either less cautious or less fortunate than the rest of us, and his death emphasised the risk to which we had all been subjected, for there was not one of us but had been in the leads at some time during the journey.

Many factors had entered into the success of the expedition, but standing pre-eminently at the head was *experience*. Through a period of nearly twenty years, a thorough knowledge of all the details of Arctic work, equipment, methods, clothing, rations, capabilities of Eskimos and dogs, the contingencies of ice travel had been gained.

In the previous expedition, for the first time a true knowledge of actual conditions existing in the central polar basin had been secured, and with this combination it was possible to provide for practically every contingency. Added to this was the fortunate factor of a not unusual depth of snow on the icefields to impede us, and the non-occurrence of strong easterly or westerly winds while we were on the ice. The occurrence of such winds, resulting as they would in pronounced lateral motion of the ice, would have given us serious trouble. Such wind as we did have was from the north, and had the effect of keeping the ice crowded against the land and preventing lateral motion.

On July 18th the *Roosevelt* left her winter quarters, and was deliberately driven out into the centre of the channel pack off Cape Union. From here she fought her way south in the channel, and passed Cape Sabine on August 8th, thirty-nine days earlier than in 1908 and thirty-two days earlier than the British expedition in 1876.

On August 26th I landed the last of my faithful Eskimos at Cape York. On September 5th the expedition arrived at the wireless station at Indian Harbour, on the Labrador coast, whence, on the 6th, the message "Stars and Stripes nailed to North Pole" was sent vibrating southward through the crisp Labrador air.

The culmination of long experience—a thorough knowledge of the conditions of the problem (gained from the last expedition), together with a new type of sledge, which reduced the work of both dogs and driver, and a new type of camp cooker, which added to the comfort and increased the hours of sleep of the members of the party—combined to make the present expedition an agreeable improvement upon the last in respect to the rapidity and effectiveness of its work, and the lessened discomfort and strain upon the members of the party.

NOTES ON MATHEMATICAL METHODS.

THE *Educational Review* (Madras) has been publishing in instalments an article "On the Teaching of Mathematics in Secondary Schools" which deals with multiplication. The various steps advocated differ sufficiently from our methods to be noteworthy.

I. Numbers 1–10: (*a*) Use squared paper and make a multiplication table to record results.

(*b*) Use squared paper to demonstrate the following:

(i) $3 \times 4 = 4 \times 3$, *i.e.* $a \times b = b \times a$

(ii) $3 \times 7 = 3 \times 5 + 3 \times 2$, *i.e.* $a(b+c) = ab + ac$

(iii) $3 \times 7 = 3 \times 3 + 3 \times 4$, *i.e.* $a(a+b) = a^2 + ab$.

II. Numbers 11–20: (*a*) Extend multiplication table to the products of numbers 11–20 by numbers 2–10: by process $a(b+c) = ab + ac$, making $b = 10$.

(*b*) Use squared paper to show

$14 \times 13 = 10^2 + 10 \times 4 + 10 \times 3 + 3 \times 4 = 10 \times 17 + 3 \times 4$,

i.e. $(a+b)(a+c) = a[a+b+c] + bc$, where $a = 10$.

The working rule developed from this is shown as follows:

$16 \times 18 : 16 + 8,\ 24$

48

288

III. Numbers 21–100: (*a*) When the "tens" digits are the same:

$35 \times 37 : 35 + 7,\ 42$

$42 \times 3 = 126$

$5 \times 7 \quad 35$

1295

(*b*) When the "units" digits are the same:

$67 \times 47 : 6 \times 4 = 24$

$(6+4)7 = 70$

310

$7^2 = 49$

3149

(*c*) When one number has both the digits the same:

$$48 \times 33,\ 48+4,\ 52$$
$$52 \times 3 = 156$$
$$24$$
$$1584$$

(*d*) Squaring numbers of two digits:

$$26 \times 26,\ 26+6=32$$
$$32 \times 2 = 64$$
$$36$$
$$676$$

(*e*) Product of any two numbers of two digits:

$$\begin{array}{r|l} 35 & 5\times 7 = 35 \\ 47 & 3\times 7 + 5\times 4 + 3 = 44 \\ \hline 1645 & 3\times 4 + 4 = 16 \end{array}$$

The author, Mr. S. Chinnasami Ayer, suggests the use of this last method, that of David Munn, to find the product of even larger numbers. To Western minds it is curious to see both in this article and in the column devoted to mathematical solutions by contributors a rule for squaring numbers ending in 5: $(10a+5)(10b+5) = 100ab+25$, where $a=b+1$; *e.g.*, 135^2

$$= (13\times 14)100 + 25$$
$$= 18225$$

English teachers of elementary mathematics may find the steps outlined above suggestive.

In the February number of *Indian Education* appears the second instalment of an article on "Ancient Hindu Mathematical Methods," from which we reproduce the summary table on the "Theorem of Pythagoras" which gives the various rules and shows the position of the Hindu mathematicians.

Formulae for rational right-angled triangles.

	A	B	$\sqrt{A^2+B^2}$	Authority
i.	$2a(a+1)$	$2a+1$	$2a^2+2a+1$	Pythagoras
ii.	$4a$	$4a^2-1$	$4a^2+1$	Plato
iii.	$\sqrt{ab}$	$(a-b)/2$	$(a+b)/2$	Euclid
iv.	$2ab/(b^2+1)$	$a(b^2-1)/(b^2+1)$	a	Diophantus
v.	$2ab$	a^2-b^2	a^2+b^2	Brahmagupta
vi.	$\sqrt{a}$	$\frac{1}{2}(a/b-b)$	$\frac{1}{2}(a/b+b)$	Brahmagupta
vii.	a	$2ab/(b^2-1)$	$a(b^2+1)/(b^2-1)$	Sridhara
viii.	a	$\frac{1}{2}a^2/b-b)$	$\frac{1}{2}(a^2/b+b)$	Bhaskara
ix.	$2lmn$	$l(m^2-n^2)$	$l(m^2+n^2)$	General Formula

DIFFICULTIES AND PROBLEMS IN ENGLISH SECONDARY EDUCATION.[1]

AMONG the chief difficulties that have to be met and overcome is the problem of higher education in rural areas and less populous districts. In such areas it is sometimes impossible to expect that an effective demand will exist for day-school education continued up to the age of sixteen, or that any effective local provision for such education will be made. The attempt to supply the absence of secondary schools by a scholarship system enabling children to continue their education elsewhere may in many instances not only involve an expense disproportionate to the benefit gained, but give a further impulse to the movement, against which so much effort—legislative and other—is directed, the continued replenishment of the towns at the expense of the country, and the draining of the country of some of the best elements of its life. Neither the development of "tops" to rural elementary schools nor the extension to rural areas of the special type known under the name of "Higher Elementary Schools" seems to meet this difficulty effectively.

As regards the many other important problems which now lie before the Board of Education in regard to secondary education:

(i) The first and most important is the recognition of the essential unity of education. Education is one thing; any dislocation in it is at the best but a necessary evil. It ought to be continuous from the time when a child first passes beyond the home and goes to school up to the time when he ceases to be under educational tutelage, has been taught how to learn, and can thenceforth go on to learn for himself. How far this ideal is removed from existing facts or from any set of facts which can be contemplated as soon possible is only too obvious. But short of this there is no finality, and the higher the aim is fixed the higher the attainment is likely to be. The problem to be faced is how to unify education by liberalising the whole of it. A break of gauge is harmful and wasteful, but much may be done to ease it, and the social organisation cannot for a long time to come be so adjustable that it can be altogether done away with. An education system based on a social class system would be contrary to the spirit of democracy; and democracy itself is naturally jealous of anything which even *seems* to suggest or resemble special treatment of a privileged class. But it may be possible that in this connection a danger may arise which will have to be guarded against carefully: that this jealousy may, through an incomplete apprehension of the complexity of the problem, tend to restrict the province and contract the scope of a national system of higher education.

(ii) In education, as in all other things, there is a certain antagonism between quantity and quality. It has been pointed out with great force that a few thoroughly good secondary schools are better with a view to future development, if not even as regards present requirements, than a larger number of schools which are of imperfect efficiency, because defective in premises and equipment, in quality of teaching staff, or in scope of instruction. In the efforts which are being made by local authorities towards a full supply of provided secondary schools this danger has to be kept in mind very seriously.

(iii) Another danger, which is apt to attend the best efforts, not only of local authorities, but of the central authority also, is that of absorption in machinery. The entire lack of organisation commented on by the Royal Commission has now given place temporarily to a state of things in which there is a risk of organisation swallowing up everything else, of means being made into an end, and of the education, for the sake of which the whole system exists, being subordinated to matters of less importance, such as inquiries into the particular conditions under which it is given or its value as a source of reports and statistics. It is a risk which the Board of Education is specially watching at the present time.

(iv) One of the dangers of any State system of education must always be that, unless great care and imaginative insight are present, there arises a tendency to an imposed uniformity with a consequent discouragement of local and personal initiative, and an absence of elasticity in the adaptation of schools to the special circumstances and to what may be called the specific genius of their own area. In this matter, too, we are closely watching modern developments, and, while endeavouring to keep our own administration as free as possible from this defect, we try

[1] From the Report of the Board of Education for the Year 1908-9. [Cd. 5130.] 9½*d.*

also to warn local authorities of the evils that will arise if they themselves or their officials intervene too closely in the conduct of the local secondary schools when in the hands of an efficient headmaster or headmistress aided by a good staff.

(v) A problem of some difficulty is the due balancing of the claims of inspection and external examinations, whether regarded as a means of testing or of promoting the efficiency of the schools. Both have defects, and each is incomplete in itself; moreover, there is a tendency to move somewhat violently by successive reactions from one extreme to the other. The tendency of the last few years towards doing away with examinations, so far as this was a matter in the administrative province of the Board of Education, shows signs of giving way to a new doctrine. The usefulness, and even the necessity, of formal examinations as a test and a stimulus is now being much urged. It cannot be said that on this matter any conclusion has hitherto been reached which commands general acceptance; and the importance of the question is so great that the Board of Education has asked its Consultative Committee to investigate and report on it.

(vi) Special problems, very interesting and very intricate in their nature, arise in connection with the education of girls. It is fortunately the case that there is much more disposition in the case of girls' schools than in schools for boys to favour experiments and give free play to fresh ideas; but the result is that the schools in which these experiments are carried out find considerable difficulty in accommodating themselves even to the most elastic limits which are possible in general regulations. The Board has increased its staff of women inspectors to assist in the successful and sympathetic handling of this side of their work.

(vii) The problems already mentioned are all closely connected with the fundamental questions of the limits within which State interference and State control are for the advantage of education. Fears have been expressed that the growth of central control almost inevitably tends towards the predominance of a certain fixed type of education in secondary schools, and that the true interests of education may suffer gravely from the imposition of principles which do not apply uniformly and which take insufficient regard of local and personal characteristics. The Board is keenly alive to this danger, and constantly on the watch against it; and, so far as it is aware, the fullest freedom is allowed under the Regulations consistently with real efficiency in the education that is provided. Moreover, in addition to the general increase of elasticity which it has always kept in view as desirable and has found itself able to give in successive revisions of the Regulations, a special provision has lately been made for encouraging, by means of a specific grant, any carefully devised educational experiments of a pioneer and promising nature in methods of teaching. Several applications for this special grant have been made; so far it has been given in respect of two objects: (1) the new oral method of teaching the ancient languages, and (2) the interchange, under arrangements come to between the Board and the Education Ministries of France and Prussia, of French or German teachers with English teachers.

It is true, of course, that the freedom of school authorities in initiating special types of curriculum and organisation, or new experiments in method, must always, in the case of schools largely maintained through the Board's grants, be to some extent limited by their having to obtain the Board's previous approval. How large a freedom can be given in this respect with due precaution against the waste of the very large amount of public money now given annually to secondary schools up and down the country from Parliamentary funds is probably a question of more real importance than many others which engage a larger share of public attention and are the subject of much more excited controversy.

POETRY BOOKS AND PROSE TEXTS.

National Poetry Books. V., VI., and VII. Edited by A. P. Graves. 72 pp. each. (Pitman.) 4*d.* each.

Select English Classics: Boswell, Gray, Sonnets, Lamb. Edited by "Q." 186 pp. (Clarendon Press.) 1*s.* 3*d.*

Lycidas. Edited by S. E. Goggin. With Introductions and Notes. 40 pp. (University Tutorial Press.) 1*s.*

Longfellow's Shorter Poems. 100 pp. (Nelson.) 6*d.*

English and Scottish Popular Ballads. Edited by R. A. Witham. 187 pp. (Harrap.) 1*s.* 3*d.*

Selected Poems of Shelley. Edited by G. H. Clarke. 266 pp. (Harrap.) 1*s.* 6*d.*

Robinson Crusoe. 334 pp. (McDougall.) 8*d.*

Julius Caesar. Edited by A. F. Watt. 160 pp. (University Tutorial Press.) 2*s.*

As You Like It. Edited by A. R. Weekes. 137 pp. (University Tutorial Press.) 2*s.*

Narratives Selected from Peaks, Passes and Glaciers. Edited by G. Wherry. 156 pp. (Cambridge University Press.) 1*s.*

Pride and Prejudice. Edited by Mrs. F. Boas. 211 pp. (Cambridge University Press.) 1*s.*

Selected Essays of Goldsmith. 146 pp. (Cambridge University Press.) 1*s.*

Poems for Infants and Juniors. Edited by A. P. Graves. 32 pp. (Pitman.) Two books, 4*d.* each.

Black's Supplementary Readers: Old Time Tales, Folk Tales from Grimm, From Sweep to Water-baby. (Black.) 6*d.* each.

Rawlinson's Herodotus, edited by E. H. Blakeney, 2 vols.; *Merivale's Rome*, edited by O. Smeaton, 1 vol.; *Adam Smith's Wealth of Nations*, edited by Prof. Seligman, 2 vols.; *Edgeworth's Castle Rackrent* and *The Absentee*, edited by Brander Matthews. All in Everyman's Library. (Dent.) 1*s.* each.

THE "National Poetry Books," edited by a poet, break old ground in a somewhat new way. The custom, if yet it is hardened into a custom, of including an editor's poems with those of the mighty dead is open to criticism; but there is only praise for the good "editing" of old songs and ballads. The choice is admirable, and the ordinary pitfalls have been avoided. A few notes follow each piece. "Recitation" is kept in view throughout.

Boswell, Gray, Sonnets, and Lamb seem to be a curious mixture for one of the Select English Classics; but these selections made by "Q." are bound together; the neatness has been commented on before, and "Q." is the editor.

Milton's "Lycidas" is a good introduction to the pastoral; but it is as well when writing for young students to quote. They will not quote: they do not look up authorities; and it would be interesting to set an examination paper on "Lycidas" or "Adonais" without touching the text at all, merely to find out whether the comparative method, so much advocated in notes, had been carried out. Mr. Goggin's "Lycidas" is admirable so far as it goes, but the poem calls aloud for a quite large study.

Longfellow is always welcome; nothing better exists for the younger children to learn—and to remember. It is

satisfactory to find editors who are careful about the printing of Greek when it comes their way. Nobody but the *Westminster Gazette* seems to think Greek worth printing correctly.

An admirable ballad book is from the States, based, of course, on Child. It is quite a learned little volume, and serves as more than an introduction to balladry. We do not understand the objections to altering the text of old ballads when editing for the young. Percy, Burns, Scott, and a host of others "tampered" with texts even without this provocation. The same publishers send us the "Selected Poems of Shelley." The editor complains that literature is not yet vital in "our higher schools" (*i.e.*, in U.S.A.); but surely "Prometheus Unbound" and "Adonais" (printed in full) are, or ought to be, beyond our higher schools. There is not one educated person in ten, we should think, who has followed in thought the relentless teaching of the "Prometheus": is the world, the adult world, ready for it yet? There is an excellent introduction and a serviceable bibliography.

"Robinson," with questions on his doings which would have amused Defoe, is published, clearly printed, for 8*d.*, and "Julius Caesar" and "As You Like It" are prepared for the examinee; and "Peaks, Passes and Glaciers" is arranged as a reading book, along with "Pride and Prejudice" and Goldsmith's "Essays." For little children Mr. Graves has edited "Poems" in two books, a good introduction to the "National Poetry" mentioned above, and Messrs. Black send three junior supplementary readers which contain some of Kingsley's "Water-babies" and Grimm's and others' folk tales. Of course, children like these stories; but the time has come when publishers might employ good translators (not the usual transliterator) on French, German, and Italian work. The wealth of stories in these literatures—Perrault, D'Aulnoy, and Grimm excepted—has not been realised by young or old.

Lastly, we have to welcome Rawlinson's "Herodotus," once so dear, now so cheap; Merivale's "Rome," Adam Smith's "Wealth of Nations," and Miss Edgeworth's "Castle Rackrent" and "Absentee," a set of six books difficult to match on any library shelf when one considers that six shillings will purchase all. They are from the ever-growing Everyman's Library. Washington Irving's "Granada" is not known as it once was: Mr. Frowde reprints it in the World's Classics. Surely the dead cannot complain that they are forgotten.

THREE NEW ATLASES.

(1) *New School Atlas of Comparative Geography.* Ninety-seven maps and diagrams; with index. (Philip.) 2*s.* 6*d.*

(2) *Atlas of the World's Chief Industries.* Twelve maps. (Philip.) 2*s.*

(3) *Handy Scripture Atlas.* Twenty-four maps. (Philip.) 6*d.*

MESSRS. GEORGE PHILIP AND SON, LTD., are to be commended for yet another development of their "comparative" maps. In their "New School Atlas" they emphasise the need of basing all geography teaching on physical geography, for a very large proportion of the ninety-seven maps and diagrams issued within its covers are of the familiar and instructive green, brown, and blue type. On these are superimposed, where necessary, red boundary lines for the student of political geography. There are, of course, several political maps pure and simple, and there is a good index. A series of world maps—many, we are glad to note, on Mollweide's equal-area projection—deal with the phenomena of nature and are particularly valuable. The British Isles are lavishly cared for, and supply the teacher who is specialising on his own country with just the maps his form will want; in addition to the ordinary physical and political maps, well arranged opposite each other, are maps dealing with winter and summer climate, annual rainfall, vegetation, distribution of crops, geology, density of population, and communications. The main defects we notice are: the register of colours is not always impeccable; the so-called "Dokhtol" of Tibet is still *in situ*, notwithstanding Sven Hedin's recent discoveries; there are no insets of the U.K. for comparison; and there are no representative fractions given on the ever-varying scales. It is surely, too, a mistake—at all events on school maps—to hachure as well as tint the highland areas. Clearness at once suffers, as anyone will see who compares the map of British S. Africa (Pl. 56) with that of Central Africa (Pl. 55), or the three physical maps of the British Isles with any of the European States following them.

Two other atlases have been issued recently by the same firm. The world's "chief industries"—a well-known collection of maps originally published in the pages of *Commercial Intelligence* in 1903—comprise wheat, sugar, tea, coal, gold, silver, copper, iron ore, iron and steel, cotton, wool, and silk. These important trade commodities are treated of in twelve good diagrammatic maps. The maps themselves are very clear and very speaking, and are accompanied by an explanatory letterpress. They are excellent alike for blackboard or lantern-slide work. The worst of it is—the figures are out of date. The facts and figures of 1902–3 seem woefully behindhand in 1909–10, and, indeed, convey false impressions with regard to such items as China tea, American wheat, and Transvaal gold. The statement that "The Soudan offers a hopeful field. Lord Cromer is doing all he can to aid the cotton industry there," is on the same plane. However, the lessons are there, and the good geography teacher, *if he has the time*, will easily apply the moral and adorn the tale by a reference to any handy up-to-date year-book.

The other atlas, a small and good sixpennyworth, shows the usual set of maps one sees printed at the end of some Bibles. It is useful to have them collected in a handy form. With the exception of a good orographical map of modern Palestine, there are no physical maps. This is a pity. Biblical history—indeed, all history—should walk hand in hand with geography. It cannot do so unless the physical features of a country are given the prominence to which they are entitled.

HISTORY AND CURRENT EVENTS.

NINE years ago we referred to the passing of Queen Victoria, and now, as we write these lines, the event of the day is the death of her son and successor, King Edward. We knew in 1901 that we could not anticipate for him a reign as long as hers, but we did not expect that the parallel would be so close between the years of George III. and George IV. and those of Victoria and Edward VII. Writing in or about 1603, when, after a reign of forty-five years, Elizabeth was evidently nearing her end and men's minds were, as the preface to the Authorised Version of the Bible reminds us, full of fear as to change, Shakespeare said:

"The cease of majesty
Dies not alone, but, like a gulf, doth draw
What's near it with it: it is a massy wheel,
Fix'd on the summit of the highest mount,
To whose huge spokes ten thousand lesser things
Are mortis'd and adjoin'd; which, when it falls,
Each small annexment, petty consequence
Attends the boisterous ruin."

We should not perhaps in these days use such extravagant language, but there is a widespread feeling, in the absence of knowledge about our new King, that Edward has gone from us at a time of crisis when his wisdom and experience will be sorely missed.

WE wonder how many persons have connected the death of King Edward with the return of Halley's comet. "Superstitions" die hard, even if they ever die at all, and there may be amongst us some who, if they knew enough history, would note that that same comet appeared in the year of another English Edward's death, his, namely, who is commonly called the "Confessor." That death led to a year of trouble and change. Aytoun, in his poem on "Edinburgh after Flodden," refers to the belief of that time that "northern streamers" are

"Fearful lights that never beckon
Save when kings or heroes die."

And Raleigh, in his "History of the World," holds that the stars *do* influence human events. Certainly there are some folk in Hungary who, in April last, believed that the comet would inaugurate the "end of the world," and who, owing to a neighbouring village being on fire, had a terrible night in consequence.

THE story of Bunyan's life is, or at least should be, well known to us all. "Converted" in 1653, he joined a Christian Church, and before long became a preacher of the Gospel. In 1660 he was imprisoned for his preaching, and remained twelve years in Bedford goal. Not during this imprisonment, but in a later and shorter one, he wrote the book which has made his name immortal. He died in August, 1688, a few months only before the Revolution which would have made his life more pleasant. But there are some aspects of his life which are not so generally known as they might be. The Church which he joined in 1653 was Congregational or Independent, the pastor of which was John Gifford. In that very year Gifford was presented to the living of St. John's, Bedford, and under him and his successor, Burton, this body of Independents used the building and resources of the Established Church in that parish. In 1660 Burton died, and the Church chose Bunyan for its pastor. If the "Restoration" had not occurred just at that time, the "tinker" might have been the rector of St. John's. Thus it is not very inappropriate, after all, that a window is to be erected in Westminster Abbey to the memory of the author of "Pilgrim's Progress."

NOT only is Bunyan therefore in his place in a building of the Church of which he was a member, at least legally according to the law of his day, but Westminster Abbey itself is appropriate to him for the same historical reason. It has long been known, and it has recently been fully shown in a book on the subject, that for certain years of the interregnum of 1649–60 Congregationalists used Westminster Abbey as a meeting-house. And the history of these two—the Church of St. John's, Bedford, and the Abbey Church of Westminster—is but a sample of what happened then. If a history of the English Church had been written in 1658 in the spirit of the remarks on the subject which can be found near the end of Thomas Hobbes's "Leviathan," the writer would in all probability have found no more to wonder at in the change of that Church in his own time from Episcopacy to Presbyterianism or Independency than in the change of the sixteenth century from dependence on the Bishop of Rome to insular independence.

ITEMS OF INTEREST

GENERAL.

WE are informed officially that the Board of Education has decided not to make any changes for the ensuing educational year in their Regulations for Public Elementary Schools, or for the Preliminary Education of Elementary School Teachers, or for Secondary Schools, in England.

THE annual conference of the Association of Headmistresses will meet at the Godolphin School, Salisbury, on June 10th and 11th next. The president of the association, Miss Burstall, will preside.

THE Board of Education has decided that, in the case of secondary schools upon the Grant List, the additional grants for educational experiments provided for by the Regulations for Secondary Schools may again be made for the purpose of aiding a limited number of such schools to maintain French or German assistants engaged under the Conventions between the Board of Education and the French and Prussian Ministers of Education. According to these Conventions, young French and Prussian secondary-school masters and mistresses recommended by their respective Ministries may be attached for a year to secondary schools in England. The grants made will, as a rule, be £30 for each assistant, or half the cost of maintenance, where the total cost does not exceed £60. Further information as to the conditions under which these grants will be made, or under which schools not eligible for grants may receive French or German assistants, will be found in Circular 745. Schools eligible for these grants, and willing to receive French or German assistants on these terms, or schools not eligible for grants, but prepared to receive assistants without grants, are requested to apply at once to the Secretary, Board of Education, Whitehall, London, S.W.

AMONG the changes announced in the 1911 regulations for the Oxford Local examinations are several modifications of the senior and junior syllabuses in botany. In both cases the number of natural orders prescribed for special study is to be fewer than at present. On the other hand, senior candidates are expected to have a knowledge of the life-history of a fern, and their powers of accurate observation may be tested practically with flowers or other parts of plants not necessarily belonging to the prescribed natural orders. In both grades the greatest emphasis is now laid upon the need for the performance, by the candidates themselves, of simple experiments in plant physiology. That it should be necessary at this date to add special paragraphs insisting on experimental work, to a syllabus which for so many years has required a "knowledge of the principal functions associated with the different organs and tissues of plants, and of the chief experimental evidence on which such knowledge rests," is of rather melancholy significance.

ENCOURAGEMENT is given to the movement in favour of more handwork in schools by the addition of needlework as a separate section in the Oxford Senior Local examinations in July, 1911. A special feature of the syllabus lately issued is that each candidate is required to send up a

brief diary of the work done in each lesson during the year, together with three samples of her work. One of these is to be a garment, made up in material; and unnecessary strain to eyesight in sewing long seams and hems may be avoided by the use of a machine. The written examination seems to be designed on common-sense lines to test the power possessed by the candidates of using their knowledge in purchasing material and calculating the quantities required. The practical examination will be on the lines already adopted by the Board of Education, except that the tacking up of paper patterns will not be required.

As we announced last month, the "coming of age" celebration of the National Home-Reading Union includes a meeting on June 23rd at the Mansion House. One of the main objects of the meeting will be the raising of an endowment fund of £10,000, to enable the union to avoid an annually recurring deficit in its modest working expenses and to enlarge its operations in the future. The fees charged for membership are necessarily very low, and the work is hampered and curtailed in every direction by lack of means and the necessity to beg for subscriptions. Already a good beginning has been made by the gift of £400 by Dr. Paton, of Nottingham. The union is appealing for the help of City companies and other public bodies in London and elsewhere having funds available for educational purposes, and the gifts are asked for of private benefactors who share the desire to spread the love of healthy literature, and know the educational value to the nation of such guidance and help as the union supplies.

THE second volume of the U.S. Commissioner of Education for the year ended June 30th, 1909, which is now available, gives some interesting statistics referring to secondary education in America. The number of secondary-school pupils in the United States enrolled in schools reporting to the Washington Bureau was 1,034,827. This is the first time the million mark has been reached. The rate of increase in the number of secondary-school pupils is greater than the rate of increase in population. In 1890 the number of such pupils was 367,003, or about 5,900 to the million of population; in 1900 it was 9,500 to the million, and in 1909 about 11,700 to the million, or more than 1 per cent. of the population. There has been a wonderful growth of American public schools as compared with private schools in the last nineteen years. Every year since 1890 has shown a substantial increase. The private secondary schools increased up to 1895, but since that date their number and enrolment have declined.

THE second International Conference on Elementary Education is to be held in Paris, at the Sorbonne, on August 4th to 7th next. The conference is being organised by an International Bureau, consisting of representatives of the various associations of teachers throughout Europe. The conference will comprise members entitled to take part in the discussions and to vote upon the resolutions submitted, and other persons engaged in the work of public education in various types of schools. Among subjects to be discussed are: compulsory attendance; aim and object of elementary science teaching in primary schools; the professional training of the teaching staff and the professional training of the staff engaged in the work of inspection and administration; and educational continuation work in various countries. Further information may be obtained from Mr. Ernest Gray, 67, Russell Square, London, W.C.

THE Modern Languages Committee of the Teachers' Guild has issued an attractive programme of summer courses for the ensuing season. Only one French centre has been arranged for this year—at Honfleur, which had such a successful season in 1909; but both the German towns, Neuwied and Lübeck, at which popular courses were held last year, again appear on the present scheme. At the former place the work will be of a literary character; at the latter practical and commercial subjects will form the principal topic of instruction. Should the weather prove propitious—last season was a terrible one for travellers—it is hoped that the attractions of Santander, in Spain, will induce a large number to undertake the journey, which can be performed now by various routes. The certificates of proficiency, awarded by the Guild last year for the first time, which have been found to be much appreciated, should form a further inducement to many teachers to enter for the courses. The date for the assembling of the students is August 2nd at Honfleur, August 3rd at Neuwied, August 4th at Lübeck, and August 5th at Santander.

MANY school libraries contain copies of the advertisement brochures issued by the various railway companies and tourist agencies; for this purpose we commend to teachers "Trips through Spain," issued in English by the Orleans Railway. This brochure, of 32 pages, consists of a short account of the impressions of a tourist, by Mr. J. Causse, and is handsomely illustrated in colours. Madrid, Cordoba, Seville, Toledo are specially treated, and a map showing the routes from London is printed on the cover.

TEACHERS of botany or observational nature-study, especially in those schools where geography is correlated with these subjects, will find of interest the prints of New Zealand flora published by the New Zealand Education Department. We have received specimens of prints nos. 33–40, which include the broad-leaved "cabbage tree" (*Cordyline indivisa*), which sometimes reaches a height of 25 feet, and three kinds of Veronica, of which there are more than eighty different species in New Zealand.

PART I. of the report of the Education Committee was presented to the London County Council on March 1st. This deals with elementary education, and the education officer states that it is now possible to deal with purely educational questions as distinct from the administrative questions which have absorbed so large a portion of the reports since the Council became the educational authority. The report has been prepared with the view of giving a general impression of the work which is being done in the elementary schools, and special attention is devoted to such important aspects of elementary education as religious instruction, moral instruction, and the physical welfare of children. Specimen time-tables are included to show the various elements in the elementary curriculum. As regards remedial work in the schools, it is stated that medical inspection showed that of the 700,000 children of London about 4 per cent. were affected as to the eyes, less than 1 per cent. as to the skin, and 2 per cent. as to the ear, nose, or throat. Arrangements are in operation for the treatment of these children at the hospitals. The Council decided to adopt the "incidental" method of moral instruction on the ground that "systematic instruction in ethics to young children tends to become formal and barren, and that far more value is likely to accrue from such inculcation of habits and right thinking as can be secured in connection with the ordinary lessons of the school."

SECTION VI. of the same report deals with educational progress since 1870, and is, perhaps, the most interesting part of the report. A district inspector of thirty-one years' service, headmasters and headmistresses of more than

thirty-five years' service, submit memoranda dealing with the conditions of service of teachers, the type of pupil, the pupils' educational attainments and fitness for future work, their general behaviour, and the condition and good order of the streets, especially as regards youths and girls under twenty. Conditions of service are said to leave little to be desired; boys and girls leave school at fourteen "fairly intelligent, honest and truthful, and with some amount of adaptability." "There are not so many weedy, ill-conditioned children as there were some years ago." "There is certainly less 'hooliganism' than there was five years ago." These statements are picked out more or less at random from these memoranda, which appear to the education officer to be of considerable value in connection with the question which is so often put, "What has forty years of public elementary education done for the country?" There are in Section VII. memoranda by the Council's inspectors and organisers upon certain subjects of instruction. The report upon English, by Dr. Boas, deals with the scheme whereby arrangements are made for teachers to take honours degrees in English.

THE report of the twenty-sixth year's work of the Assistant-mistresses' Association has reached us. It contains details of the many-sided activity of the association, which has a membership of nearly 1,000. The address of the president, Miss E. M. Bancroft, is given *in extenso*, and from it we extract the following remarks dealing with the present outlook on education: "As we climb a mountain there is at every step a view below and a view above, yet there are special moments of outlook, after scaling a crag or rounding a corner, when instinctively we check our pace and look around us. We have reached to-day in the educational world a point at which for a moment we may take breath and see the vision that lies before us. For we are such as the seventeenth-century poet described when he wrote:

'Two worlds at once they view
That stand upon the threshold of the new.'

It is a new world which is slowly being created around us. As the prospect widens before our eyes, distant possibilities appear, features of an unfamiliar landscape slowly assume form, roads open out, the ends of which we cannot see. Whether the sight brings to us pleasure and hope, or disapproval and foreboding, it is a sight which cannot fail to attract our eyes."

THE *Queensland Education Journal* for March contains, under the heading "Nature Study Lesson," an article by Mr. Sydney B. J. Skertchley upon the Malay Archipelago. The author divides the archipelago into three groups: (i) massive continental islands represented by Borneo and New Guinea; (ii) irregular islands, represented by Celebes and Gilolo; if Borneo were submerged 800 feet it would be converted to an island of this type; (iii) linear islands, illustrated by the Sunda Islands. A line drawn from Bali to Lombok divides the islands into a shallow-water and a deep-water group. The deep-water group, including Celebes, has Australian types of animals and plants, while the shallow-water group is Asiatic.

IN the March number of the *Educational Review* (New York) there is an interesting account of a visit to the gymnasial seminar conducted by Prof. Fries, who is professor of education in the University of Halle and director of that marvellous institution—the Franckesche Stiftungen—which owes its origin to the work of the Pietist Francke in the early years of the eighteenth century. The practical training of the secondary teacher is described at its best, that is to say, working as those who designed it intended it should work. *Lehrer-Mangel* makes sad havoc even of Prussian regulations; as the professor of pedagogy in another (non-Prussian) university once expressed it to the present writer, "the regulations are delightful on paper, like so many other things in that bureaucratic country." A curious article written in defence of Latin in American schools informs its readers that English boys begin their Latin at the age of eight or nine, and their Greek not very much later—an admirable practice in his view, and yet he closes with a plea for the "abandonment of the miserable, mechanical, cut-and-dried methods of teaching" which grip American schools like a vise" (*sic*).

THE *School Review* (Chicago) for March is an unusually interesting number. First place is given to a briefly told story of the Demonstration School and Laboratory of the Department of Education in the University of Chicago in special relation to what the children's parents have done for it. Mr. Jefferson Elmore makes a strong plea for the teaching of Latin as a means of self-expression, drawing the material for composition from within the range of the pupil's experience, and Dr. Hermann Schwarz writes a fifth article on "Experimental Pedagogy in Germany." Here he deals very clearly and suggestively with the difficulties that attend the estimation of fatigue. The American work of Robert Owen and his son Robert Dale Owen at New Harmony and elsewhere is sympathetically described by F. T. Carlton. Other articles on Library Reading in connection with Class Work and on a school "Spelling Hospital" make up a capital number.

SCOTTISH.

As was generally expected, the proposal in the new Code for a reduction in the size of classes in elementary schools has called forth an unparalleled storm of criticism and protest. This has in most instances been made on two grounds—the growing tendency of the Department to assume all power into its own hands, and the exercising of that power without any regard to the practical difficulties of the local authorities. The school boards contend that no changes involving enormous additional expense to local authorities should be made unless the central authority is prepared to bear its fair proportion of the additional cost. This seems a reasonable position to take up; but in practice the result, we fear, would be to block all educational advance. The Cerberus of the Treasury is not easily convinced, and there would be much haggling and delay before additional grants were forthcoming for every needed educational reform. At the same time, it has to be admitted that the Department is itself to blame for the present storm. It has used its powers in a ruthless fashion. It has invented a new and wonderfully effective "short way with Dissenters." In brief, this may be said to be "No obey, no pay." The threat of loss of grants has been worked for all it is worth, and the most recalcitrant of Boards has been brought to its knees. But a feeling of resentment and suspicion has been roused against the Department, and has only been awaiting an opportunity for expression. The new proposals have given Boards their chance, and from John o' Groats to Maidenkirk they are in full cry against the Department. *Carthago delenda est.*

THE Scotch Education Department, warned, probably, by the unfortunate state of matters in England, has determined to bring the number of students in training for the teaching profession into relation with the number of

teachers required for the efficient staffing of the schools. Wisely enough, the Department has gone to the root of the matter. It is no remedy to say that only a certain number of students will be admitted to training. This ensures that the market for teachers will not be overstocked, but it does so at the expense of a large number of students who complete the preliminary course of training only to find all further progress rigidly barred. In future, the supply is to be limited at the source. The number of junior students in any one year is not to exceed the number of vacancies in the training centres. This does not make any allowance for wastage during the junior student stage. But there are other sources of supply that may be relied upon to make up any decrease in the ranks of the junior students.

As much criticism has been directed from time to time against the products of the elementary school, the Educational Institute (Glasgow Branch) convened a special meeting to discuss the whole subject of the school curriculum. The meeting was open to the public, and critics of present-day school methods and results were invited to come forward and state their case. Unfortunately, they did not appear, and judgment went against them by default. The discussion, however, showed that the teachers themselves are alive to defects in their school system. There was general agreement that the present curriculum is too bookish, and it is felt that the introduction of more manual occupations will give variety and interest to the school work, and will also tend to encourage initiative and self-reliance. All were also agreed that the present system is too uniform and rigid, and a strong plea was entered for greater elasticity in the regulations so that individuals can be dealt with according to their needs.

THE spring meeting of the English Association was held this year in Stirling. The forenoon sederunt was devoted to a discussion on the report on grammatical terminology. A motion in favour of uniformity in terminology was unanimously approved. But the subsequent discussion seemed to show that only lip-service was given to the principle of uniformity. Uniformity in every case seemed to be approved only provided it meant *conformity* with the speaker's opinions. Judging by the variety of opinion expressed, there is no hope for common agreement on the mass of detail submitted by the committee on the subject. The greater the detail, the greater and wider will be the cleavage of opinion. The only hope lies in the committee recognising this fact and going back to first principles. The whole science of grammar can be reduced to a few general principles. If there is agreement as to these, the details will soon unify themselves.

THE new Code of Regulations for Continuation Classes, providing further instruction for those who have left school, shows few alterations from that of last year. The outstanding feature in the volume is a circular in which the Education Department reviews the situation created by section 10 of the Education (Scotland) Act of 1908. In that section school boards are required to make suitable provision, through continuation classes, for the instruction of young people above fourteen years of age in subjects bearing on the industrial occupations of the district. Powers are also given for dealing with parents and employers who hinder attendance on the part of such young persons. The circular emphasises the importance of the new departure, which definitely places upon Boards the responsibility for watching over the educational needs of adolescents. Justifiable satisfaction is expressed that Parliament has seen fit to allow this far-reaching experiment to be made first in Scotland, and the fact is recorded as a tribute to the soundness and efficiency of Scottish educational traditions. The experiment, doubtless, will be followed with keen interest in England, where public opinion is declaring itself strongly in the same direction. At the same time, it has to be recognised that in neither country is the movement in favour of compulsory attendance for adolescents general enough to secure its object. The first step is to provide facilities for all young people above fourteen years of age. If these are not generally taken advantage of, it will be time enough then to talk of compulsion. After all, "a volunteer is worth half a dozen pressed men."

THE statistics of the different Scottish universities for last session show a considerable increase in the number of entrants. Of this increase, Glasgow is credited with 103 and Aberdeen with 46, while Edinburgh and St. Andrews show a slight decrease. Much dissatisfaction has been expressed by secondary-school teachers at the neglect of the university authorities to revise the regulations for their preliminary examination. It is satisfactory to find that a beginning has at last been made. A conference of representatives from all the universities has been summoned by Sir Donald MacAlister, and it is hoped that they will issue their recommendations in time for the opening of the new session.

IRISH.

THE new Intermediate Rules and Programme for 1911 were issued about the middle of April. There are some important changes. Natural philosophy as a subject for the middle and senior grades disappears. The Preparatory Grade Prize Fund, which was reduced a year ago from £1 per student to 10s., will now be abolished altogether. The objectionable rule remains which prevents a student passing a second time in the same grade. Some of the preliminary notes prefacing the programme are reworded; *e.g.*, "questions in parsing, analysis, paraphrasing, prosody, and literature" are no longer restricted to the preparatory and junior grades, nor to such as naturally arise out of the prescribed books; the object of prescribing books in connection with English composition is defined as being "to indicate approximately the range of subjects for composition and to suggest methods of treatment and materials for the discussion and illustration of the subjects"; and separate papers are to be set in arithmetic and in algebra. In the programme itself there are several important changes. The most important is the abolition of set books in all languages other than English in the middle grade, and the substitution of standards, as in the senior grade. There are also considerable changes in the Greek and Latin authors. Sidgwick's "First Greek Reading Book" is no longer prescribed in the preparatory grade, but is replaced by Xenophon, "Anabasis," Book II. In the middle grade the standards in Greek and Latin are Plato ("Easy Dialogue"), Euripides, Livy, Ovid's "Metamorphoses." In the senior grade Demosthenes and Livy are omitted, and Aristophanes, Pliny's "Letters," and Virgil's "Aeneid" are introduced. The use of logarithms is introduced in the arithmetic course in the middle and senior grades, and the periods of English history in the different grades suffer modification. In French, German, Irish, Italian, and Spanish in the middle grade the allocation of marks is altered.

THE Catholic Headmasters' Association has requested the Intermediate Board to alter the rule against students passing a second time, and also to restore the principle of

averages. It has also resolved to ask the Joint Committee "to urge strongly on the Intermediate Board and on the Government the evident breakdown of the present system of financing intermediate education in Ireland, which may be briefly described as the provision of a shrinking revenue to meet growing demands, and to press that the funds at the disposal of the Board should be supplemented by an annual sum to be estimated according to the actual needs." The association has further urged the Senate of the National University to adopt the senior grade intermediate standard for the matriculation examination, and to take steps to secure, if possible, uniformity of matriculation standard on the part of all three Irish universities. Professional and other examining bodies distinct from the universities are to be asked to adopt the matriculation examination as their preliminary examination, and, if they think this standard too high, to base their examinations on the middle grade intermediate programme.

The National University of Ireland has adopted the following programme in reference to the courses and regulations for matriculation for the years 1911 and 1912. All candidates for matriculation must take five subjects, one from each of the following groups: (i) Latin, Greek; (ii) Irish, French, German, Italian, Spanish, Dutch, or any other approved modern language; (iii) English or history and geography; (iv) mathematics or natural philosophy; (v) one other subject, not already selected above, from the following list: Irish, English, Latin, Greek, French, German, Italian, Spanish, any other modern language approved by the Senate, history and geography, mathematics, natural philosophy, chemistry. Students who do not take Irish at matriculation shall, after matriculation, be required to attend a course in Irish language, literature, and history to the satisfaction of the professors of these subjects in the early part of their course of study for degrees.

The Board of Trinity College has made the following new provisional arrangements with Magee College, Londonderry: (i) Two years' residence at Magee College shall be deemed equivalent to a year and a half in Trinity College. (ii) Prior to admission to the B.A. degree the Magee College student shall be required to attend and to get credit for one term of ordinary or honour lectures in Trinity College in each of the sophister years, and one term in Magee College in the junior sophister year. (iii) Every Magee College student of Trinity College shall be eligible for election into any of the college societies or clubs. (iv) This arrangement will be reconsidered at the end of five years or sooner by consent of both parties.

The Department of Agriculture and Technical Instruction announces that it will in August this year award not more than six industrial scholarships to persons engaged in industries such as the woollen, linen, leather, and tanning industries, and also not more than six commercial scholarships to young men having a sound general education and some commercial experience. The commercial scholarships will be worth £100 a year for two years, and the industrial £80 for one year, but renewable for a second or third year. The object of the commercial scholarships is to afford facilities for the holders to obtain training in some higher institution with a view to their employment as teachers of commercial subjects in Ireland, and the object of the industrial scholarships is to enable persons, who must already have been engaged in one of the higher branches of the industry, to take a full course of instruction in an institution providing special courses of an approved character with the view of training them for the management of such industry. The holders of the commercial scholarships must be at least twenty-one years of age on July 1st next; this age limit does not apply to candidates for the industrial scholarships; but in both cases candidates must have been either born in Ireland or resident for the three years immediately preceding. The holders of the scholarships will be selected by the Department on consideration of the qualification and experience of the applicants, who must fill in and return the proper form to the secretary of the Department before the end of June.

WELSH.

There was a very special connection of the late King Edward VII. with Wales in that he was, when Prince of Wales, installed as Chancellor of the University of Wales at Aberystwyth on June 26th, 1896. He was accompanied by the Princess; and amongst the splendid assembly were the late Mr. Gladstone, Lord Spencer, and Lord Herschell, upon all of whom honorary degrees were conferred by the Prince. The scene presented when the Prince, as Chancellor, conferred the degree of Doctor of Music on the Princess of Wales, and the charming smile and bow with which she received it from her husband, will never be forgotten by those who witnessed it. After conferring the degree upon her the Prince conferred a degree on "the veteran statesman and eminent scholar," Mr. Gladstone; he said at the luncheon: "I may truly say that one of the proudest moments of my life was when I found myself in the flattering position of being able to confer an academic distinction upon Mr. Gladstone."

On the accession of King Edward VII. to the throne he resigned the Chancellorship of the University of Wales, and his son, the new King, succeeded to it. But so as to retain a connection with the University the King graciously accepted the title of Protector of the University of Wales, thus following, it is said, the precedent in the case of the University of Portugal. The University of Wales has therefore been unique in the official connection of the late King, and it may be hoped that King George V. will continue the precedent and become Protector of the University. The Chancellorship, then, is likely to be vacated, and as Sir Isambard Owen has lately given notice of retiring from the senior deputy Chancellorship, a double serious responsibility will probably soon devolve upon the Court of the University in the choice of successors.

It is well known that the remains of the old Parliament House of Owen Glyndwr are at Machynlleth. Mr. David Davies, M.P. for the district, has bought the property, and has informed the Urban District Council that he is prepared to carry out the work of renovation and reconstruction on condition that the Council, without reserve, undertakes to manage and maintain the whole of the property and keep it in a proper state of repair. This national monument will thus pass into the hands of a public body, and is more likely than ever to become a place of pilgrimage to those interested in Welsh history.

At the half-yearly meeting of the Court of Governors of the University College of Wales, Aberystwyth, held at Barmouth, it was stated that, in spite of the recently increased Government Treasury grants, the one palpable drawback in the position of the College is the paucity of its endowments. The present total endowment is not more than £20,000. "If the members of the Court," said the principal, "should have the ear of any friends able to help the College to meet this need, they could not do better than suggest to them the endowment of pro-

fessorships or scholarships." The fact is, of course, that when an education costing £30 or £40 per head is given to fee-paying students for £10 per session, and when, further, a large number of scholarships are also given by the College, it is clear that the Welsh colleges need enormous subsidising if the teaching staff is to be reasonably paid and if the equipment is to be adequate.

AT a meeting of the Cardiganshire Education Committee it was reported that there are still twenty-four non-provided schools in the county. Though these schools have been taken over by the authority, the salaries of the head-teachers have not been brought under the same scale as those of the head-teachers of provided schools. Although the question has been deferred for two years, it is now proposed to defer it still further. A resolution was carried that the question be still further deferred in order to ascertain whether the non-provided schools could be transferred to the county authority. Two Nonconformists have now spoken out plainly in favour of uniform treatment. One pointed out that the head-teachers of non-provided schools do the same work, and are subject to the same examinations, as in provided schools. Another said Nonconformists had always had to contend against disabilities because of their Nonconformity, and he was surprised that they were attaching disabilities to teachers who were associated with the Church of England. It is curious that those who are endeavouring to defer any action express "sympathy" with the teachers. It is clearly a case of "Save me from my friends" so far as they are concerned.

MR. LLEWELLYN WILLIAMS, M.P., has done good service in bringing before the notice of the House of Commons the question of the preservation of the National Records of Wales. This has resulted in the appointment of a committee to inquire as to the present condition and future positions of Welsh public records. This, of course, may lead to the transference of Welsh records from the Record Office in London to the Welsh National Library. Apparently the ancient records of Wales, by the Act of 1838, were taken to the Rolls Office in 1841, and, it is stated, have never been sifted or investigated since.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

A Practical Introduction to French Phonetics. By G. G. Nicholson. x+195 pp. (Macmillan.) 3*s.* 6*d.*—This is a convenient addition to the elementary guides to French pronunciation, based on considerable research. The chapters on liaison and elision deserve particular attention. Valuable hints are given to the English learner, and the importance of acquiring a good knowledge of the phonetics of the mother-tongue is duly emphasised. In representing English sounds, Mr. Nicholson differs from the usual practice of those English phoneticians who use the alphabet of the International Phonetic Association; it certainly cannot be maintained that in standard English *gay* is pronounced [gɛɪ] and loaf [lɔof]. Here, and elsewhere, there is a tendency to adopt a pronunciation not regarded as desirable by us, but doubtless common in Australia. (Mr. Nicholson is lecturer in French and German at the University of Sydney.) It may be added that Mr. Nicholson has evidently not quite made up his mind in which way the "long o" should be represented: on p. 5 it appears only as [ɔo], on p. 25 he mentions [ȯu] [ɤu], "or even" [ɔo], as southern English pronunciations, and [ɒu], [ɔo] as common in America and Australia; on p. 46 he gives only [ɤu], on p. 175 [ɔo] and [ɒu]. Such wavering is necessarily confusing to the beginner. For one who already has some knowledge of phonetics, this book offers much that is of interest and value; whether it is quite simple enough for the beginner is another question.

Phonetic French Reader. By C. Heath. viii+87 pp. (Bell.) 1*s.*—To ensure accuracy in the printing of a phonetic text is undoubtedly difficult; but the number of misprints in this reader is intolerable. When it is added that the vocabulary is seriously incomplete, it will be seen that this book cannot be recommended.

Easy Selections for French Sight Translation. By J. E. Mansion. 32 pp. (Harrap.) 4*d.*—Fifty short extracts "progressive in difficulty" and intended to be "suitable for pupils of the age of thirteen, who have already studied French for at least a year." We are not sure that such pupils should be given snippets to translate; continuous texts appear to us preferable. Those who like snippets will find in this booklet a convenient selection. We have noted a few misprints: *que* for *qui* (i, l. 9, and vii, l. 3), *if* for *il* (ix, l. 12), *le* for *la* (xxvi, l. 7), *nu* for *un* (xxxi, l. 3), *la* for *le* (xxxvi, l. 13).

One Thousand Common French Words. Selected and arranged by R. de Blanchard. 32 pp. (Harrap.) 4*d.*—This vocabulary contains the words "roughly divided in four parts [A to D] according to the importance of the words," and each part in alphabetical order. The French is given on pp. 5 to 18, the corresponding English words on pp. 19 and foll. The arrangement is obviously unsatisfactory; the grouping should have been according to meaning. Further, the verbs and adjectives have been seriously neglected. The selection is often curious; *corbeille* and *peser* appear in the D section, *ardoise* and *apôtre* in the A section. Among common words we are asked to include *loquet, boisseau, laie, panaris.*

FROM Messrs. Hermann und Friedrich Schaffstein, in Cologne, we have received several picture books illustrated by Ernst Kreidolf, who also supplies the text. There is something very queer about this artist, whose work has received much praise from his countrymen. He has a rich imagination and manages to look at the world with the eyes of a fanciful child; and to appreciate him it is necessary to become a child again. Then we can enjoy his tale of the "Wiesenzwerge" and the collection of "Alte Kinderreime," his "Blumenmärchen" (in which he challenges comparison with Walter Crane), and his "Sommervögel," a fantastic book of butterflies and moths. To the more critical his pictures may often seem crude, especially in the "Kinderreime," and his decorative work, in particular, will seem disappointing, with the exception of the "glow-worm" end papers of "Sommervögel," in which there is a touch of Japanese influence. His best work, on the whole, is to be found in the "Blumenmärchen," which costs five shillings, and which all should purchase who follow with interest the varied developments of German art.

Classics.

Horace, Satires II. Edited by J. Gow. xxviii+136 pp. (Pitt Press Series.) 2*s.*—Dr. Gow has long since won his spurs as an editor of Horace. His criticism and his helps are full of sound sense and good scholarship, with touches of humour; the paragraphs on Horace's Latinity (xxiv ff.) are particularly useful. The notes are short and to the point, if they are hardly all necessary (see, *e.g.*,

ponere, iv[14]; *horto*, iv[16]; *Misero* and *echini*, iv[33], to take one piece alone). But, on the whole, it is a good school book.

The Agricola of Tacitus. With Introduction and Notes by D. R. Stuart. xxviii+112 pp. (New York: The Macmillan Company.) 2*s.* 6*d.*—This edition deserves notice because the editor has used the two new MSS. of the "Agricola," E and T, which, as he rightly says, bring us five hundred years nearer the text of the author. A list of the important variants from Halm's text is given in the appendix. An important reading is *luere* in 19[17] for the corrupt *ludere*. Another is *nonanis* for *Romanis*, 26[9]; and in 36[5] *quattuor* is inserted before *Batavorum*. There are a number of others. The editor has also made one or two modest conjectures. The notes are, as usual, too many; and we do not approve of the running analysis in English, which the pupil himself ought to make. Otherwise they are satisfactory, and so is the introduction, except in some points of style.

Elementary Latin Exercises. By A. E. Hillard and C. G. Botting. x+212 pp. (Rivingtons.) 3*s.* 6*d.*—This book is meant to lead up to North and Hillard's "Latin Prose Composition." The exercises begin from the first lesson of Latin, and each has prefixed the portions of grammar which the exercise covers, with references to Kennedy's "Revised Latin Primer" and the "Shorter Primer." These books are not now regarded as satisfactory, which is a drawback. The order of learning "which the authors think best" follows the ordinary numbering of the declensions and conjugations, beginning with *amo* and passing to the first declension, and so on. The exercises, although they are free from some of the worst faults of the authors' Greek book, are still very stupid; they are wholly devoid of interest, and are quite incoherent. There are 192 English exercises, and after them sixty-four Latin exercises, with short vocabularies. We should not consider that the book needed any further notice but that the authors have devoted their preface to an attack on a system which they seem to have evolved out of their own imaginations. It seems there are critics who believe that Latin can be taught better "without any formal or ordinary course of even the essentials of grammar," a "method of learning entirely by observation." The preface is a good example of opinions formed without any knowledge of the facts.

A History of Roman Literature. By H. N. Fowler. 312 pp. (Appleton.)—This book differs from most histories in its wide scope: for it includes, not only the classical writers, but those of the Silver Age and of the Empire, including early Christian writers, down to the end of the early civilisation in the fifth century, and Boethius. The book lacks spirit: it is dull, but otherwise good. We may note a few omissions and other points. The author does not seem to us to be right in his view of the accent in Saturnian verse: *e.g.*, *immórtalés mortáles sí forét fas flére*. He has not realised the relations of accentual to quantitative verse, nor that the accentual verse survived all through on the lips of the people: he underrates also the importance of the Atellan farces and Fescennines. His literary criticism is cheap, as when he calls the "Carmen Saeculare" the "work of a masterly artist and an inspired poet" (126). In speaking of Suetonius, he omits to mention his keen nose for scandal, which must be taken into account in estimating his value as a historian (230). In the "Pervigilium Veneris" he seems to take *amet* as a future (242). He does not seem to know the old English translations of the classics. Otherwise the book is a useful handbook. It is illustrated by a few plates.

A First Latin Unseen Book, for Lower Forms and for Candidates preparing for the Preliminary Local Examinations. Selected by W. Williamson. viii+56 pp. 6*d.* net. *A Second Latin Unseen Book, for Middle Forms and for Candidates preparing for the Junior Local Examinations.* Selected by W. Williamson. xii+116 pp. 1*s.* net. (Mills and Boon.)—These books imply that unseen translation should be part of Latin work from the beginning. This we hold to be wrong: for the early part of the work the text-book, properly handled, is enough, and will provide all the necessary exercise in discovery. Such disjointed sentences as are given in the beginning of the First Book are, we believe, altogether bad. The little episodes and stories that follow are not very much better, and these are interspersed amongst more sentences. The better of them might have been made into a reading-book for the first year. The editor gives the English of most of the words with each exercise at first, and a few later. A few hints on tackling an unseen are prefixed.

The Second Book contains pieces taken from the Oxford and Cambridge Locals, the College of Preceptors, and other examinations. Hints are prefixed. The book is avowedly made to prepare for certain examinations, and will certainly be useful to those who think fit to subject young boys to such tests. It would be well, we think, if they did not.

Pliny's Natural History: Selections from Books VIII.–X. Edited by L. D. Wainwright. xiv+154 pp. (Alston Rivers.) 2*s.* net.—No one but will be pleased to see a selection of Pliny's animal yarns for schoolboys: but we regret that Mr. Wainwright had not the courage to bring Pliny's Latin to the classical standard in such points as (p. 10) *vivunt ducenis annis*, (p. 3) *cetero*. Perhaps Pliny did not mean to be sarcastic, but he sometimes is so: *simiarum genera hominis figurae proxima; caudis inter se distinguuntur*. The notes give all that is necessary.

English.

Early English Proverbs. (Thirteenth and fourteenth centuries.) Collected by the Rev. W. W. Skeat. 147 pp. (Clarendon Press.) 3*s.* 6*d.*—Prof. Skeat has edited a little book of "Early English Proverbs," drawn mainly from his own reading. We cannot tell what is or is not a proverb. Sentences, apophthegms, proverbial expressions, sayings, saws, adages overlap one another awkwardly. All simple literatures love proverbs; and a collection of dialectal English proverbs would supply fine reading. A good beginning might be made with the works of Eden Phillpotts; but special county glossaries would soon swell the list, though few counties have their novelists as Devon has. We doubt if London has any distinctive proverbs: it is too witty to be sententious; but Mr. Pett Ridge would know. Old Burton would yield many; and Erasmus's "Adagia" is almost worth translating. Of course, great collections have been made; but we are thinking particularly of the quaint side of proverb-collecting. A few are here copied from Prof. Skeat's little book, and the reader must take our word that there is not a word in them that is not pure English:

A lutel ater bitteret muchel swete.

Vrom mulne and from chepyng, from smithe and from ancre huse, me tithinge bringeth.

Everyches monnes dom to his owene dure churreth.

Beter is child unbore thane unbuhsum.

The bet the be, the bet the by-se.

Three thinges dryven a man out of his hous; that is to seyn, smoke, drepping of reyn and wikked wyves.

Prof. Skeat does not give "Every mickle makes a muckle": perhaps it is not old enough for him. Old or new, it needs explanation, notwithstanding the ingenious suggestion of "pickle" for "mickle." And what are we to say to "picking a fly out of a pudding"?

Method of Analysis. By Frances E. Bevan. vii+88 pp. (Blackie.) 1s. net.—The first thirty pages of this little book consist of a "recapitulation of the main principles of sentence construction and the method of analysis"; the other fifty contain passages from English literature for practice in analysis. Stress is laid throughout on logical analysis, the author being of opinion that this affords a "valuable training towards the understanding of English literature, and may often be a substitute for paraphrasing." We have nothing to urge against such excellent sentiments—only we hardly find in them a sufficient justification for the making of this book. The grammatical summary does not lay any claim to originality of method or treatment, and the passages presented seem to differ in no way from the literature which those who use the book will be reading in their normal course. Certainly the passages are classified according to the nature of the clauses they are meant to exemplify; but any grammar does as much.

Practical Lessons in English. xvi+175 pp. (Browne and Nolan.) 1s.—The author of this book writes a cogent preface in which he indicates many much-needed improvements in the teaching of English grammar. His book opens with the following definition: "A sentence is a combination of words by which something is said or asked about something else." We do not wonder that the motto chosen to explain the scope of the book is Prof. Tyndall's opinion that "the proper study of a language is an intellectual discipline of the highest kind." We are unable, we fear, to discover any great difference in these "Practical Lessons" from the somewhat abstract summaries and definitions which have usually called themselves "English Grammars" in the past. There are the same lists of inflexions, including testator, testatrix, the same, or nearly the same, unsatisfactory terminology, and the same chapters on word-building, prosody, and the rest. There is an appendix on easy aids to spelling, from which we suspect that the author is a wag as well as a grammarian.

History.

THE Education Committee of the London County Council has published through Messrs. Dent a series of placards for some hundred days in the year, each containing an announcement of an event famous in British history. The committee calls them a *School Calendar*, and they are accompanied by a *Handbook* to the same (xviii+308 pp.; 2s. 6d. net) which contains a preface by Dr. Garnett, a calendar of events for each day in the year, the story of each event mentioned on the placards, and a list of portraits, statues, &c., of persons mentioned in the handbook, with the places where they are to be found. There are two indexes, one arranged according to the calendar, the other in chronological order. "These sketches contain sufficient facts to enable a busy teacher to give a short address to his pupils: but it is by no means necessary that lessons should be restricted to the matter presented in this book."

Heroes of Wales. By W. J. Thomas. 128 pp. (Horace Marshall.) 1s. 4d. Prize Edition, 1s. 6d.—Without preface or index, this little book commends itself to us as a well-written account of some famous Welshmen from Arthur to Sir Hugh Owen. The story of the six "heroes" of the Middle Ages, together with the following chapter on "religion in Wales," go far towards making an introduction to the national history sufficient for the ordinary reader. Other "heroes" are not connected so closely with the Principality except for the accident of birth, but Sir Hugh Owen was a great helper towards the modern development of education in Wales. Of course, the story is told from the Welsh point of view, but this is perhaps sometimes desirable for the English reader.

Stories from British History (B.C. 54–A.D. 1485). By T. Bevan. 206 pp. (Pitman.) 1s. 4d.—This is one of the "Tower History Readers," is pleasantly written, and is supplied with abundance of pictures, coloured and others. Sometimes the chapters take the form of the imaginary adventures of some young hero. At other times the history is too much for treatment of this kind.

In the New Forest. By H. Strang and J. Aston. 160 pp. (Frowde.) 1s.—We have previously noticed other tales by the same authors, and this is of the same good kind. The authors, having read the usual authorities on the reign of William I., have adapted them to the story of an English boy in conflict with a Norman noble, and so supplied the jam for the powder of the "dry history." In spite of the curious mixture of old English words (explained in the margin) with quite modern ways of talking, the book will no doubt be interesting and useful to boys, and should be in the school library.

The Story of the Royal Navy. 32 pp. (Gale and Polden.) 6d. net.—This is a collection of pictures, some coloured, others photographic, of ships and incidents in naval warfare. It is accompanied by detached portions of the "story" and quotations from poems and Collingwood's despatches from Trafalgar.

The Story of Bayard. Edited by A. G. Andrewes. vii+162 pp. (Methuen.) 2s. 6d.—The author has evidently read the original authorities for Bayard's life, and here reproduces the flavour of them, telling the story in an interesting way, without troubling the reader too much with the reasons for the wars in which the hero was engaged. There are eight illustrations by V. Lecomte.

Landmarks of British History. By L. Dale. x+256 pp. (Longmans.) 2s. 6d.—This book scarcely corresponds to its title. It consists of a sketch of British history from the earliest times to the present day, told in an unusually graphic style, which avoids details but makes the story vivid. The domestic history of the eighteenth century is omitted, its place being taken by chapters on the British in India and the British in North America, and, after a chapter on social and industrial progress in the nineteenth century, the book ends with one on "Government and Citizenship." While, therefore, scarcely available as a class book, it would find a useful place in the school library. There are eight coloured plates and seventy-two other illustrations, but no index.

Geography.

Black's Diagrammatic Atlas of the British Empire. By An Elementary Teacher. (Black.) 1s.—This atlas of fifty or so diagrams presents certain facts with regard to the British Empire in bold black and white. It may be objected that to show elevation above 1,000 feet dead black and below 1,000 feet white does not present the

relief of any country adequately; this is especially true in the case of India. Climatic features are presented as rainfall maps: except in the case of Australia these are "mean annual" maps; in the latter case there are added maps of mean *winter* and mean *summer* rainfall which are incorrectly named, as mean *winter* rainfall is given "December–March," and shown as above 10 inches in the north-east of the continent. There are diagrams to show the commerce of the British Empire, and the values for the United Kingdom are those of 1908; those for the colonies are undated. The figures are given to the nearest £ in cases which deal with hundreds of millions of pounds sterling. When will the writers of school geographies realise that statistics, to be valuable, should consist of triennal or quinquennial averages, and that for children values should never exceed four significant figures at the most! Does the average *adult* differentiate between £244,000,000 and £244,134,089 as part of a total of £649,000,000 (£649,425,690)? There is a short history of the Empire (four pages).

Mathematics.

An Elementary Treatise on the Dynamics of a Particle and of Rigid Bodies. By S. L. Loney. viii+374 pp. (Cambridge University Press.) 12*s*.—The number of text-books available for a student beginning the study of these subjects is not so large that much apology is needed for adding to their number, and Prof. Loney's book will be found well adapted to the requirements of many for whom the study of Routh's swollen volumes would be a rather formidable task. Those who possess a fair knowledge of the calculus, including the elements of differential equations, should experience little difficulty in mastering the contents of the book. Such difficulties as exist arise chiefly in connection with the geometry of motion, and are most troublesome in three-dimensional work. For this reason the author in the part of the book dealing with rotation has confined himself almost entirely to two-dimensional problems, making an exception in favour of the classical problem of the top. We think that in the earlier part of the book greater prominence might have been given to the interpretation of the first integrals of the equations of motion in terms of energy and momentum, not only because in many cases these are the only integrals obtainable, but also in view of the fundamental position which energy occupies in the higher developments of analytical dynamics and in the mechanical theories of physical phenomena. A novel and useful feature is the indication in the text of the direction of forces and motions by small straight or curved arrows, much circumlocution being thereby avoided. The book is written in the author's well-known lucid style, and the large number of fully worked examples should materially assist the reader in gaining an intelligent comprehension of the methods employed.

Practical Curve Tracing, with Chapters on Differentiation and Integration. By R. H. Duncan. viii+137 pp. (Longmans.) 5*s*. net.—The graphical representation of functions has taken a prominent place in mathematical education, and, provided it is used to assist, and not to take the place of, rigorous reasoning, it performs a very useful *rôle*. After all, diagrams are merely illustrations and not proofs, and we should be sorry to think that any engineers who use this book should learn no other way of differentiation than by measuring the inclination of tangents to graphs. We think too much time may be wasted over plotting straight lines and parabolas. Still, there is much in the book that is useful and interesting. Graphical methods undoubtedly provide the most expeditious means of obtaining a first approximation to the roots of algebraic equations of high degree and of transcendental equations, and the student will find here a trustworthy guide to the proper mode of treating such problems. In providing information on matters usually neglected or touched upon lightly in the more "academic" treatises, the book will fulfil a useful purpose.

Pitman's Smaller Commercial Arithmetic. By C. W. Crook. 128 pp. (Pitman.) 1*s*. net.—This book is not designed for pupils in schools, but for those who, on their entry on commercial life, find that either they have forgotten their arithmetic or that what they learnt is not adapted exactly to their present needs. For such this little work should be extremely useful. Prominence is given to methods of approximation, quick methods of calculation, and there are numerous hints for saving time and attaining accuracy. For builders and surveyors there are chapters on mensuration.

Lessons in Applied Mechanics. By J. H. Cotterill and J. H. Slade. Vol. i., vi+256+460–512 pp. Vol. ii., vi+258–458 pp. (Macmillan.) 3*s*. each volume.—This is an edition of this well-known and useful work issued in two parts to meet the convenience of students. The first volume contains Parts I. and III., dealing with the Principle of Work and Hydraulics, while Part II., on the Strength of Materials and Structures, forms vol. ii.

Mathematical Tables. By R. W. M. Gibbs and G. E. Richards. 15 pp. (Christophers.) 8*d*. net.—Those who have to make frequent use of tables know how much their comfort depends upon the size of the page, the type, and general arrangement. In these respects these tables compare favourably with similar collections. They are four-figure tables, and include logarithms, antilogarithms, natural and logarithmic sines and tangents, chords and radians. Three pages contain lists of mathematical formulæ, physical and chemical data. The book is strongly bound, and well suited for use in schools and technical classes.

Science and Technology.

Physiography for Schools. By R. D. Salisbury. vi+531 pp. (Murray.) 6*s*. net.—This book, by the head of the department of geography in the University of Chicago, is intended primarily for the use of high-school pupils. It is fully abreast of modern research and methods, but, as it naturally treats the subject from the American point of view, it is not likely to be adopted as a text-book in our schools, though it certainly ought to be used extensively by teachers and general readers in this country. The style is vigorous and clear, and shows throughout the conviction that "reasoning and following reasoning contribute more to the pupil's mental growth than the accumulation of great numbers of facts." Facts, especially those relating to the topography and climatic conditions of America, are nevertheless provided in great abundance and handled in a singularly interesting and suggestive manner. Besides twenty-four plates—chiefly contoured maps from the U.S. Geological Survey—the book contains a wealth of photographs and diagrams.

The Plant and its Life. By F. Belton. 177 pp. (Pitman.) 3*s*.—The requirements in botany of the preliminary certificate and certificate examinations of the Board of Education are here catered for in a form which will appeal to candidates anxious to "get through" with the minimum amount of effort. Fortunately, the syllabus does not lend itself readily to cramming, and, in spite of the restricted

field to which the author has confined himself, the book forms a safe introduction to the subject. Many of the illustrations are crude.

Farm and Field. By W. F. Rankine. 104 pp. (Pitman.) 1*s.*—We have nothing but praise for this "country reader for senior scholars." Its aim is frankly utilitarian: to teach the principles underlying farm routine. It is interesting throughout, and will be read, we think, with respectful attention by the pupils into whose hands it falls. It is admirably illustrated.

The Scaly Winged. By R. B. Henderson. xii+113 pp. (Christophers.) 1*s.* net.—Young naturalists taking up the study of butterflies and moths will find a trustworthy and interesting guide in this book, prepared for the use of the Natural History Society at Rugby School.

The Wood I Know; The Meadow I Know; The Stream I Know; The Common I Know. By W. P. Westell and H. E. Turner. 78 pp. (Dent.) 8*d.* each.—These volumes, which complete the series, maintain the high standard set in the first two numbers, which we have already commended. They are all attractively written and very beautifully illustrated. The six books are also published, with calendars and notes, in two volumes at 2*s.* 6*d.* net each, or in one volume at 5*s.* net.

An Introduction to the Study of Biology. By J. W. Kirkaldy and I. M. Drummond. v+259 pp. (Clarendon Press.) 6*s.* 6*d.*—Although prepared specially for the use of candidates for the Oxford and Cambridge schools examinations, this book is well adapted to more general use. Without going into the details of histology and embryology, it gives an adequate account of the structure and life-history of the plants and animals prescribed in the syllabus. A very useful feature is the brief description of organisms linking up these types, so that the reader is put in possession of a connected outline of the subject. The book is well illustrated.

Physiology: Part I., Descriptive. By B. P. Colton. xiii+386 pp. (Harrap.) 3*s.* 6*d.*—Since his book is intended for school use, Mr. Colton wisely associates physiological facts with the rules of hygiene whenever this can be done. The increased significance which the laws of health possess for children who know something of the workings of the human body makes the use of such books in schools very desirable.

Elementary Physiology. By W. B. Drummond. viii+108 pp. (Edward Arnold.) 2*s.* 6*d.*—This book is intended for the use of teachers and others interested in education. Its distinctive note—a most valuable one—is the attention paid to the peculiarities of childhood, which are treated with admirable clearness. The chapters on the physiology of bodily exercise and the nervous system of the child ought to be studied by all teachers; they will give many a priceless hint on matters of fundamental importance in education. "It is so easy," as the author remarks, "to forget that growth requires time; and the guidance of growth, foresight and patience."

Rhenish Glass for Laboratory Purposes.—Messrs. Griffin and Sons direct attention to a new Rhenish laboratory glass recently put on the market, for which they are sole agents in the United Kingdom and Colonies. According to the report from the Reichsanstalt, the glass bears comparison with the best Jena in power of resisting water and other reagents. It appears also to withstand sudden changes of temperature of more than 200° C. All kinds of apparatus can be obtained, the prices of which compare favourably with those of Jena glass. To give an example, conical flasks holding 500 c.c. can be obtained at a cost of 5*s.* 3*d.* per dozen. The glass is well worth a trial for all chemical purposes.

Pedagogy.

The Teacher's Handbook of Psychology. By Prof. James Sully. New (5th) edition, rewritten and enlarged (1909). vi+606 pp. (Longmans.) 6*s.* net.—The reappearance of this familiar text-book will be sure of a warm welcome from Prof. Sully's old readers, and if new ones are not appalled by the size of the book they will find it a very useful if not an altogether inspiring volume. The arrangement follows that of the fourth edition closely, though most of the chapters have been considerably enlarged or almost entirely recast. In this work of revision the author has been assisted by younger psychologists, chief amongst whom is his son, who is responsible for most of the additions to the chapters in which modern researches in physiology, fatigue, and the simpler intellectual processes have produced so much of value to the teacher. In revising these chapters, Mr. Sully has brought to bear upon his task an intimate acquaintance with the modern literature of the subject. Naturally Meumann's *Vorlesungen* play a conspicuous part, but the references to other work—American and German chiefly—are abundant and useful. In some ways one cannot but regret that the form of the older editions has been adhered to so rigidly. There is surely room for a book in which a sort of demonstrational point of view is assumed from the outset, in which the teacher or the student in training is made to *see* the points as he goes along. The facts of the psychologist, like the facts of the physicist, are capable of verification. They are to be sought, first of all, in the student's own mind and then in the behaviour of other people, particularly in that of children. But it is precisely in this observation of facts that the student needs guidance, and the best introduction to the subject would surely be one in which he is taught on what Prof. Armstrong would call the heuristic method. Such a method of approach would alter the order of things to be looked for and discussed. We should begin with the aspects of mind which we realise ourselves most acutely—our purposes and the conditions of successful pursuit. Analysis would come later; but a teacher's psychology need not pay much regard to sensation, the perception of space, &c., which, however important in their theoretical bearing, are hardly of importance in the solution of class-room problems.

Art.

Manuscript and Inscription Letters. By Edward Johnston and A. E. R. Gill. Sixteen plates in portfolio. (Hogg.) 3*s.* 6*d.* net.—This portfolio of sixteen plates, which is intended by Mr. Johnston to supplement his well-known handbook on "Writing and Illuminating," should prove invaluable to artists, craftsmen, and designers, as well as to the general student of manuscripts and ornamental lettering. The sixteen examples chosen have been reproduced by such processes as would best illustrate their various characteristics, and are accompanied by most enlightening comments on their construction and development. In view of the renewed interest which has of late years been awakened in this subject, this collection of approved examples is most opportune, and should occupy a prominent place in every drawing school and art workshop in the kingdom.

Blackboard Drawing in Line and Mass. By Robert Horspool. Twenty-seven plates. (Henry Frowde and Hodder and Stoughton.) 2s. 6d. net.—It is difficult to say more of this book than that it is well-intentioned. Written ostensibly as a guide for those teachers who, themselves unable to draw, are expected to illustrate their lessons by blackboard sketches, it resolves itself into an orthodox but wholly uninspiring treatise on freehand and model drawing, with a sprinkling of the "principles of ornament" and a dash of nature drawing. As all these subjects have been dealt with frequently and more successfully before, it is to be feared that the present publication will not be in great demand. What should be the most valuable feature of a book of this kind—the illustrations—are in this case the book's chief weakness. In no case stimulating or suggestive, they are frequently weak and puerile, and occasionally misleading; *e.g.*, the egg-cup on Plate 21 directly contravenes the rule laid down on Plate 14, Fig. 1. The inclusion of the impossible ships on Plate 23 is distinctly unfortunate.

Nature and Ornament. Part II. *Ornament the Finished Product of Design.* By Lewis F. Day. 292 pp.; 600 illustrations. (Batsford.) 7s. 6d. net.—The first volume of Mr. Lewis Day's revised version of "Nature in Ornament" (in the present edition *and* is used in the title instead of *in*) was noticed in The School World for March, 1909. The second volume now published treats of "Ornament the Finished Product of Design"; in it Mr. Day sums up with keen insight and ripe judgment the special knowledge born of his thirty odd years' experience as a leader and teacher in all matters appertaining to design and decoration. Despite the author's assertion that the book is written for designers and students of ornament, the lucid and illuminating dissertation on the various phases of decorative art, supplemented by copious illustrations from almost every available source of art and nature, will appeal to a much wider circle of readers. As Mr. Day remarks in his "Conclusions": ". . . for good or bad, ornament is about us everywhere; . . . if only as an environment, it concerns us all, whether we care for it or not; . . . it is, therefore, worth thinking about, and well worth cultivating." To all who are in any way connected with or interested in the evolution of decorative design, these two volumes should prove a source of fruitful inspiration and delight.

Miscellaneous.

National Union of Teachers Report for 1910. 474 pp. (Published by the Union.) 1s.—We have here a record of useful work of which the executive and officials of the National Union may well be proud. The report shows that the Union is fortunate in having a sound financial position, a very large membership, and able and energetic officials. We hope the Union will continue to work for efficient education and satisfactory school conditions.

A Manual of School Music in Elementary Grades. By Frank R. Rix. xiii+261 pp. (New York: The Macmillan Company.) 4s. 6d. net.—Dr. Rix has given us an admirable book, which is as good on the practical side as it is on the theoretical. It is commonly admitted that music is not the strong point of our English schools, and much remains to be done in spite of the excellent influence which Dr. Somervell has exercised in recent years. Many teachers err because they do not know exactly what to aim at; others, who know a good result when they get it, are successful, as it were, by chance. To both types of teachers the book will be most useful.

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.*

Fittings for Science Laboratories.

I believe that science masters generally will feel grateful to The School World for printing Mr. Cross's admirable paper on the above subject in its April issue. Whatever differences of opinion may arise on points of detail, the five principles to be kept in view in the planning of school laboratories, which are enumerated at the beginning of the paper, will have the hearty assent of schoolmasters. The principle of symmetry in arrangement, so as to minimise movement of members of a class, is—*pace* Prof. Armstrong—so obvious as almost to preclude discussion. It would be greatly in the interests of economy and efficiency if "authorities" charged with the provision of new school buildings could be got to realise that neither architects nor university professors are safe people to entrust with the planning of school laboratories, but rather the science masters who have to work in them. If the mistakes in construction, even during the last few years, were collected, an appalling tale of folly could be told.

Whether fittings need be so complete as Mr. Cross desires surely depends in part on the class of secondary school; the system of electrical wiring, for instance, seems to me to be unnecessary for the kind of school where most of the pupils leave between the ages of fifteen and sixteen. At the same time, we have all been tried severely by the impracticable folk whose crank is "simple apparatus," or those who proclaim that practical mechanics may be adequately taught by the aid of a fourpenny pulley.

R. E. Thwaites.

Merchiston Castle School, Edinburgh.

The importance of economy of time in laboratory work must be my excuse for this letter, for, in schools where but short periods per week are all that are possible for science, every minute saved is of importance, and every device for saving time means an increase in efficiency. Every advantage of building, space arrangement, light, &c., should be seized upon, and every assistance possible by forethought given to assist the master to devote his whole class time to personal contact with the pupil if it is desired to produce something other than "dumb driven cattle." Individuality should be aimed at in laboratory work in preference to the general march of classes through set gymnastics.

Mr. Cross's paper in the April issue of The School World will be welcomed by science masters for that reason, and especially so if through its publication others in similar positions can be induced to subscribe the results of their personal experience.

We should like our laboratories to work mechanically in so far as they do not affect the particular problems for which that laboratory was built and is used. But when we come to the solution of a specific problem, the investigation of a new condition, or an unknown or imperfectly understood reaction, then mechanical assistance must cease and the boy's whole thought and attention should be given to the solution or possibilities in hand, and should not be hampered or distracted by a research into obscure parts of the laboratory after this or that bottle, this or that piece of apparatus, and the subsequent calling of time immediately after his first faint Eureka.

Granted, then, that efficiency demands the acceptance of

the best that architects and experienced teachers can give, funds, perhaps, are not forthcoming, and here again Mr. Cross's paper will help in suggestive thoughts; and it is wonderful what can be done with existing buildings and furniture by constant plodding and a determined personal enthusiasm. If the work is worth doing, the best surroundings are worth striving for.

I am in perfect agreement with Mr. Cross that there should be as little moving about in the laboratory as possible, and for that reason certain fittings must of necessity be duplicated.

May I mention a few points which I have found serviceable in my laboratories?

(i) Considerable saving of labour in keeping laboratories and apparatus clean has resulted from the use of "Florigene" on the floors.

(ii) Skeleton shelves on the benches, with plate-glass bases for bottles, render supervision of the whole laboratory and the experiments in hand considerably easier.

(iii) There should be a vigorous means of thoroughly ventilating the laboratory within a few minutes, apart from the ordinary lofty ventilators, to serve for exceptional cases. For this purpose I find that if the large windows open outwards in two parts from the middle, the prevailing breeze can be caught or obviated as desired, and almost immediate relief given to the rooms.

(iv) Instead of recessing gas nozzles, I find that if a swivel nozzle is used, and all except the revolving tube is let into the bench, you have all that is required.

(v) Water nozzles for condensers are best placed under the reagent shelves, with a waste-trough running underneath and parallel with the shelves.

(vi) All sinks to be lipped and provided with loose drip pipes of lead, which empty into sloping troughs placed in the bench and between the cupboards of a double bench—these troughs to drip into overflow troughs placed just inside and at the end of the benches (for catching mercury); the overflow pipes to be placed loosely into pipes leading to the drain pipes. By this means each sink, trough, and pipe is easily detachable with the minimum amount of disturbance, and any flaw can be remedied in the course of a few minutes.

(vii) Fumes can be extracted quite readily by a downward flue in the bench connected with a central pipe under the floor, and carried outside into a vertical iron pipe, closed at the base, the junction being made in the vertical pipe just above an open gas-pipe, without a burner, let in from the laboratory through small holes in the wall and pipe, which also allow the gas to be lighted from the laboratory without trouble. By this means no cumbrous and unsightly fume cupboard is permanently attached to the bench.

(viii) Rubbish receptacles can be provided under each main sink by dividing the space beneath into two parts, the upper portion being fitted with a door swinging on hinges on the top horizontal side, so that it closes by its own weight, and the lower portion made to contain a removable lead-lined box.

Personally, I much prefer a separate balance room in chemical work for all but the coarsest weighings.

Stonyhurst College. C. E. L. LIVESEY.

MAY I express my thanks to Mr. Thwaites for his exceedingly kindly criticism of my paper?

I fully admit that much of the portable apparatus needed where boys are to be prepared for university scholarships would be wholly out of place in schools where boys leave at the age of sixteen. Yet this hardly applies to the permanent fittings.

In fact, I go so far as to suggest that the necessity for many and accessible sinks, fume-cupboards, rubbish boxes, and the like—so condemned by the advocates of sense, simplicity, and economy—is more marked in the latter type of school, for the classes are usually larger and the boys younger, and more liable to waste time in profitless wanderings over the laboratory.

A computation of the amount of time thus consumed by the average boy working in Prof. Armstrong's ideal single-sink laboratory would probably reveal a waste of energy sufficient to justify the severest opponent of school science. Broadly speaking, the point at issue resolves itself into this: Is the work we do in our school laboratories worth the expenditure of the extra two or three hundred pounds needed to equip them with the appliances in question, or is it better to save this expense and devote at least one-quarter of a boy's time to taking walking exercise or to waiting until the fume-cupboard is available for his use? I doubt if any master who has taught a large class of young boys in the so-called "sensible" laboratory would deny the appalling waste of time occasioned by lack of sufficient and accessible fittings. Yet we cannot disguise the fact that when Prof. Armstrong objects to them as unnecessary and *costly*, his bias will meet with ready acceptance from governors "charged with the provision of new buildings."

There is, in fact, grave danger lest his advocacy of simplicity may seriously handicap science teaching unless efforts are made to expose the falseness of his economy.

W. E. CROSS.

The Grammar School, Peterborough.

Evils of Specialised Education.

THE problem of what ought to be the best system of education to adopt in this country is one which has received a very considerable amount of thought during the past few years, yet so complex is its nature and so far-reaching are its ramifications that to-day we seem almost as far from the true solution as we were when first the problem was presented to our notice.

One reason for this is doubtless the fact that all intelligent people realise the special value of education, when conducted on proper lines, in moulding the character and in influencing the inherent tendencies of the rising generation, and so do not feel justified in accepting the first apparent solution without due consideration of its faults and virtues. The training of these young people must be a subject of great interest to every right-minded man, for to them in time must be confided the honour of the nation and the welfare of the race.

On this consideration alone it is at once apparent that the educational problem is one of supreme importance, but if the subject were further broken up into its elemental parts, and if each of these parts were in turn subjected to careful scrutiny, the magnitude of the question would be even more readily appreciated, and the difficulty of its solution more fully understood.

In these circumstances even the most sanguine of our educational experts realise that time and experience will be required to enable this question to be answered satisfactorily, and also that many changes in our present system must take place before really satisfactory results will be obtained.

One of the most outstanding evils in our system of education as it exists at present is, without doubt, the remarkable and ever-increasing tendency there is to encourage "specialisation" in a few subjects. It is true that this evil is not usually present in schools, but is far

more frequently met with in colleges or universities; nevertheless, there seems to be a certain tendency in some schools to-day to encourage the pupils to restrict their attention to a few subjects even before they have obtained a suitable foundation in general knowledge. One reason for this may be the present too great inclination to subdivide the broad avenues of thought into many narrow by-paths, and then to explore each of these by itself, regardless of the fact that in this way the true relationship between the whole and the subdivision is either totally lost or lamentably distorted, and that the knowledge gleaned does not convey a true impression to the mind of the student.

When "specialisation" is introduced before a sufficient groundwork of general knowledge has been built up it has the effect of disturbing the natural balance of the mind, of unduly accelerating the growth of some parts and of leaving undeveloped others. It detracts from or completely annuls the broadening and expanding influences which are always associated with study conducted on proper lines, and it very often distorts the true projection of facts or introduces a false standard of comparison between them.

If a man allows his brain to become centred on one particular subject, to the entire exclusion of all others, the organ soon loses its natural elasticity, and an undue importance is imparted to the subject which is far in excess of its true importance. That man ultimately develops into a specimen of the "crank" or "one-idea'd" man, and becomes finally unfit to occupy a useful position in society or to take an intelligent interest in the government of his country.

The effect so produced is much more profound in the case of a young and impressionable nature, and the consequent results are proportionately more evil.

The effect of this evil cannot readily be overestimated, for it is only by direct or indirect comparison that we can assign to anything a value, and the value so assigned, be it qualitative or quantitative, is in all cases merely relative to some chosen standard, and can only be expressed in terms of that standard.

To the average man this earth of ours appears to be of no insignificant size or mass, and that because his standards of comparison are relatively small and trivial; but the units employed by the astronomer are such that in many of his calculations he may regard it as a mere point. The racing speed of a motor-car when compared with that of other vehicles seems to us very great, but if we compare with it the frequency of the sodium light it becomes at once small and trifling. When, however, we consider the speed of the wave vibrations or frequency of the sodium light with relation to the speed of the whirling atoms of which the universe is composed, the speed of the former loses much of its significance.

All this but serves to illustrate the importance of cultivating the mind in such a manner as to ensure, so far as possible, a normal expansion together with a state of true mental poise or equilibrium, and of avoiding, as far as may be, too great a concentration of thought on one idea or subject.

It is indeed a pity that "specialisation" should have become so firmly associated with success in life from a financial point of view, and if it is once allowed to creep into our schools in the same manner and to the same extent as it has done into our universities and colleges, the future welfare of the nation will be seriously imperilled.

WALTER J. BUCHANAN.

Fairholm, Giffnock, N.B.

A Method of Introducing German Lyrics.

IT has been suggested to me that an account of the teaching of a German song might be of interest to modern language masters.

I was recently teaching "Der frohe Wandersmann" to a class of small boys, where the average age was about ten years. Most of them had done about a year's German.

I began by drawing roughly on the blackboard a sketch of a man in walking costume—heavy boots, knickerbockers, a knapsack on his back, and a stick in one hand. In the other hand he was holding his hat, as if waving it in farewell. As I sketched I questioned the class in German, leading up gradually to a complete description of the man, somewhat as follows:

Question.	*Answer.*
Was ist das?	Das ist ein Mann.
Was hat er in der Hand?	Er hat einen Stock in der Hand.
Was trägt er auf den Füssen?	Er trägt Schuhe auf den Füssen.
Wie sind diese Schuhe?	Sie sind stark.
(Er trägt also starke Schuhe auf den Füssen.)	
Wie sind seine Hosen?	Seine Hosen sind kurz.
Was trägt er auf dem Rücken?	
(Here I had to supply the word der Rücksack.)	
	Er trägt einen Rücksack auf dem Rücken.
Was tut er?	Er geht, er spaziert.
(Finally, I got the answer: er wandert.)	
Er ist also ein Wandersmann?	Ja, er ist ein Wandersmann.
Was hält er in der linken Hand?	Er hält einen Hut in der linken Hand.
Was tut er mit dem Hut?	Er schwenkt ihn.
(This answer I supplied.)	
Was tut er auch?	Er singt.

(I got this answer by the simple expedient of drawing the man with his mouth open and musical notes issuing therefrom.)

Wie ist ein Mann, wenn er den Hut schwenkt und singt?	Er ist glücklich, fröhlich. froh.

Dieser Mann heisst "Der frohe Wandersmann."

Warum ist er froh?

To this I got a variety of answers: er ist froh, weil das Wetter schön ist, weil die Sonne scheint, &c. I summarised these answers as follows: "Der Wandersmann ist froh, weil er das Wandern liebt; er liebt die Natur, die schöne Welt, die Bäume, die Berge, die Flüsse, den blauen Himmel, die weissen Wolken, den Vogel in der Luft, die grünen Wiesen, die braunen Felder. These latter things were easily sketched in the background on the blackboard. Then I went on to say: Der Wandersmann liebt Gott. Gott ist der Schöpfer der Welt.

I next asked: "Was singt der Wandersmann?" and got many different answers, such as "Die Welt ist schön, Gott ist gut, Ich liebe die Natur." I was soon able to pass on a little further, and say: "Gott schickt den Wandersmann in die weite Welt."

Ist er deshalb traurig? Nein, er ist froh.
Richtig, er ist froh; er dankt Gott und sagt:
Dass Gott mich in die weite Welt schickt ist eine *Gunst*; er zeigt mir seine Wunder in Berg und Wald und Strom und Feld.

After that we got on the blackboard the first verse of the poem:

Wem Gott will rechte Gunst erweisen,
Den schickt er in die weite Welt;
Dem will er seine Wunder weisen,
In Berg und Wald und Strom und Feld.

After the preliminary explanations given as just described the boys had no difficulty in understanding the verse, and they now saw the poetical expression of the thoughts which they had been led to attribute to the Wandersmann. During the course of the lesson I had written all the important answers on the board, and these and the verse were copied down by the boys as a sort of *résumé*.

The lesson I have here described really occupied two lessons of three-quarters of an hour each. The second and third verses, however, took less time, for all the vocabulary had already been worked up, so that by the end of the week the class almost knew the poem by heart, and were singing it with great gusto. Needless to say, I omitted the verse beginning "Die Trägen, die zu Hause liegen."

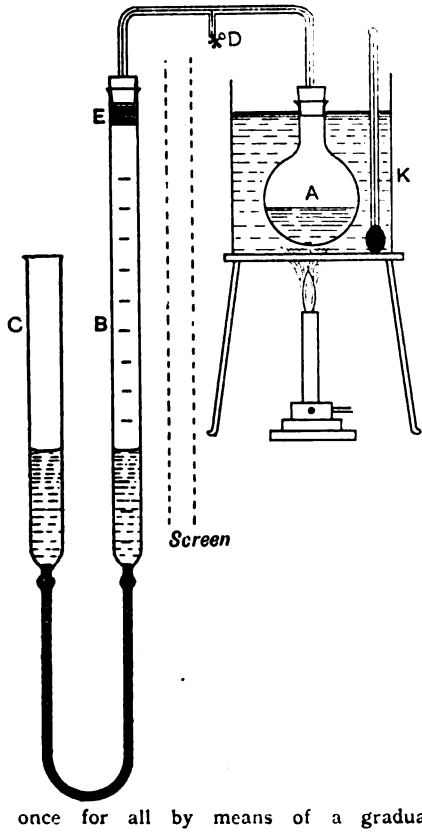
The same method can be applied to almost any of the simple German lyrics, for instance, "Das Waldhorn" or "Die Sonne machte den weiten Ritt um die Welt." I venture to think that it ensures proper working up of the vocabulary, proper understanding of the poem, "die richtige Stimmung," and furnishes a large amount of material for oral work.

R. WAKE.

Grammar School, Bridgnorth.

Apparatus for the Determination of the Coefficient of Expansion of Air.

THE flask A, of about 100 c.c. capacity, is fitted with a rubber stopper, through which passes a capillary three-way tube bent twice at right angles. The other end of this tube passes through a rubber stopper which fits in the top of the burette B. The burette is fitted to a levelling vessel C by means of a piece of rubber tubing. E is a wad of cotton-wool. To the limb D of the three-way tube is fitted a short piece of rubber tubing and pinch-cock. A scratch should be made on the neck of the flask at the point where the bottom of the cork rests when the latter is tightly fitted in. The volume of the flask can then be found once for all by means of a graduated cylinder and water. This volume should be scratched on the flask. Dry the flask carefully and fit in the cork tightly. Arrange a vessel of water K on a tripod so that the flask A is immersed up to the scratch on its neck. Remove the pinch-cock at D and heat the water in the vessel K by means of a Bunsen burner. Bring the level of water in the burette to the lowest division by raising or lowering the levelling vessel C. Allow the water in the vessel K to boil for some minutes, and then take its temperature. Replace the pinch-cock at D and turn off the gas. Replace the vessel of boiling water by a vessel of cold water (at 0° C. if preferred). The air inside the flask A contracts and the level of the water in the burette rises. Bring up the levelling tube C and arrange so that the level of water in each tube is the same. Note if any further rise of water takes place in the burette; if not, read off the volume of water and ascertain the temperature of the water in the vessel K. The experiment is quickly performed, and, moreover, the apparatus can be used continuously without any further preparation beyond the adjustment of the level of water in the burette. The following example is worked out from the data of an actual experiment carried out by a student using the apparatus described:



Temperature of hot water	= 100° C.
,, cold ,, ...	= 15° ,,
Volume of flask	= 93·5 c.c.
1st reading of burette	= 50·00 ,.
2nd ,, ,, ...	= 29·50 ,,
∴ Volume of air entering flask	= 20·50 ,,

93·5 c.c. of air at 100° C. contract to (93·50 − 20·50) = 73 c.c. when cooled through (100 − 15) = 85° C.

73 c.c. of air expand 20·50 c.c. when heated through 85° ,,

∴ ,, ,, $\frac{20{\cdot}50}{85}$,, ,, ,, 1° ,,

$= 0{\cdot}241$ c.c.

73 c.c. of air at 15° C. would become 73 − (0·241 × 15) = 69·39 c.c. at 0° C.

69·39 c.c. of air at 0° C. expand 0·241 c.c. when heated through 1° C.

∴ 1 c.c. ,, ,, $\frac{0{\cdot}241}{69{\cdot}39}$,, ,, ,, ,,

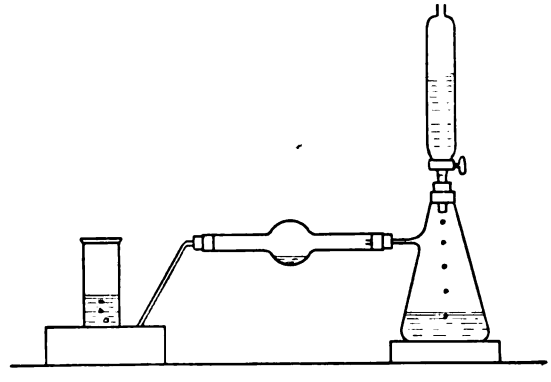
$= 0{\cdot}0035$

E. T. BUCKNELL.

Kingsholme School, Weston-super-Mare.

The Action of Burning Phosphorus upon Air.

WHILE studying this subject, the following experiment was suggested by one of my pupils (first year). It may



possibly be as new to some science teachers as to myself. By means of the apparatus shown, a stream of air is passed over gently heated phosphorus in the tube, so as to keep it just burning without producing too much heat. The volume of air passed through and the volume of nitrogen collected can be easily measured. The results are quite accurate enough to give a fair idea of the fraction

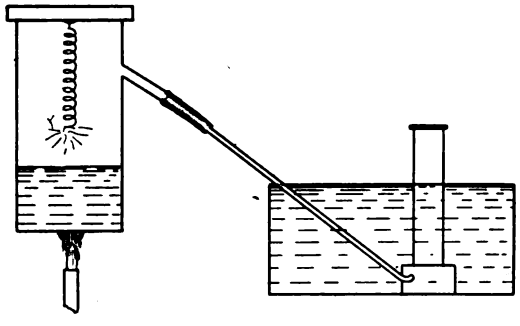
of air consumed (which was the object of the experiment), and all difficulty arising from expansion of air is avoided.

H. G. WILLIAMS.

Gordon's College, Aberdeen.

Action of Magnesium on Water.

THE following method of producing hydrogen gas by means of magnesium and steam may prove useful to science masters. The steam is generated from a little water boiled in a Eureka can, to the spout of which a delivery tube is attached. The magnesium ribbon is wound in a spiral and fastened by means of a piece of plasticine to the under side of a wooden disc, which serves as a cover for the can. To prevent escape of steam between



the cover and the edge of the can, the under margin of the disc is covered with a thin layer of plasticine. When the magnesium is ignited and the wooden cover pressed down on the can the hydrogen is collected without risk of burning or breakages. The only disadvantage is the fact that the magnesium is not actually seen burning. This, however, can be demonstrated by a glass flask in the ordinary way. The pupils are then led to expect the liberation of an element other than oxygen from the water. This can be left for investigation by means of the Eureka can.

WILLIAM MILLER.

Dollar Institution, Dollar, N.B.

Chemistry in the Oxford Locals.

THE following is a copy of one of the instructions to candidates in practical chemistry, B paper, at the Senior Oxford Local examination of March this year:

"Ignite the contents of the envelope C (which contains pure neutral sodium oxalate) at a low red heat for fifteen minutes, stirring well with a piece of clean iron wire. Dissolve 13·25 grams of the residue (which will be sodium carbonate) in 250 c.c. of water, and with this solution *determine the amount of acid in the tabloid D*. Use litmus as the indicator, and keep the solution of D warm during titration." (The italics are mine.)

I should be glad if the examiner or anyone else would inform me (i) how the amount of acid in the tabloid D can be found without knowing the kind of acid; (ii) whether candidates were expected to find out the kind of acid (N.B.—the tabloid D would weigh, so far as I can gather, not more than 1 gram); (iii) what it was that the candidates were really intended to do.

SCIENCE MASTER.

[THE acidity of a solution can be determined by ascertaining what weight of a known alkali it neutralises; the result of the determination can be stated in the form: "The solution contains x grams of acid hydrogen."—EDITORS.]

Useful Variable Resistances.

IN laboratory classes on electricity a need is often felt for fairly accurate variable resistances. In this laboratory we have now for many years used a bare manganin wire of resistance 4 ohms per metre very approximately, so that the resistance of a piece inserted between two terminals can be determined at once by measuring its length. Manganin having a high specific resistance and low temperature coefficient, this wire is very convenient for a variety of purposes, and, as we have found it so useful, I think that probably other science teachers may be glad to have it brought to their notice.

We obtained ours years ago from Messrs. W. T. Glover and Co. (Trafford Park, Manchester), who, I believe, still manufacture this particular size. Its gauge is about 30 s.w.g.

G. A. SHAKESPEAR.

The University, Birmingham.

Young People's Empire Festival, 1911.

KINDLY allow me a small space in your columns to direct the attention of headmasters and headmistresses, and all who are interested in the general welfare of young people, to the Young People's Empire Festival Eisteddfod and Gymkhana which is to take place at the Alexandra Palace, London, on May 22nd to 27th, 1911.

The object of the Festival is to stimulate and encourage a healthy rivalry among young people of the Empire in all the higher forms of art, handicraft, and physique, and the proceeds will be equally divided between: (*a*) a fund for assisting eligible young people to emigrate to our colonies; (*b*) the National Peace Scouts; and (*c*) Sir William Treloar's Homes for Crippled Children.

There will be exhibitions of, and competitions in, art, music, poetry, prose, elocution, handicrafts, sports, displays and pageantry, and competitors must have been at least highly commended in local events since January 1st, 1908.

Sir Francis Vane, Bart., is president of the council, while the Marquess of Londonderry, Viscount Islington, the Dowager Duchess of Newcastle, and Dr. John Clifford are among its vice-presidents; and in order that it may be worthy of the occasion and our great people, we shall be glad to hear of any who are willing either to become members of the general council of 300 which is being formed, or give any other assistance in their power.

CHAS. HOWES.
(Organising Secretary.)

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London, W.C.

The School World.

A Monthly Magazine of Educational Work and Progress.

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The School World

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"THE RELIGIOUS DIFFICULTY."[1]

WHATEVER be the verdict passed upon its report regarded as a scheme of educational administration, there can be no two opinions as to the courage, public spirit, impartiality, and earnestness of purpose which have animated the Educational Settlement Committee in the deliberations of which that report is the outcome. The "Religious Difficulty" has been an overt disturber of the peace for more than a century past, and its origin goes back to a time much more remote and to fundamental conditions of the national life. The task of the committee, voluntarily undertaken, was therefore extraordinarily delicate, complicated, and onerous; yet its report furnishes within brief compass a statesmanlike survey of the whole situation, and a comprehensive set of measures designed to solve the difficult problems which arise out of it.

A document so carefully prepared deserves the fullest discussion and a minute scrutiny, and no doubt it will secure these during the next few months; at this stage it is impossible to do more than describe its leading principles, adding comment here and there. The full bearing of the report and the probable consequences of its proposals will only become evident when these have been criticised from a variety of points of view.

The committee rejects without discussion three solutions of the religious difficulty which have been brought forward in the past, and presents a reasoned statement in favour of a settlement which is new, though some may feel that it was latent in the educational legislation of 1902–3. To permit the ratepayer to allocate his share of the school rate to a particular school fund, denominational or not, is contrary to the cardinal principle that a child's religious instruction is the affair of that child's parents in particular, and not of the ratepayers in general. The "secularisation" of the school is no solution, since in the belief of the committee the measure would be "educationally hurtful and also repugnant to the wishes of the immense majority of the parents." On the last point, we need information which is not easily obtainable, seeing that we have no means of learning directly what are the wishes of this immense majority. Superficially at least, it would seem that the members of most trade unions cannot be regarded as opposed to secularisation, though their collective right to speak for parents is not unchallengeable. Still, the question is not one to be answered by an *ipse dixit*, whether of the committee or of its critics. "Contracting out" is the third proposal which the committee dismisses; not many are likely to dissent from the statement that this measure, involving "short allowance" to the contracted-out schools, would end in being unfair to the children and to their teachers.

The essential principles of the committee's own plan are liberty of conscience for the teacher and pupil (or his parent), the possible inclusion of religious instruction in the ordinary curriculum of every public elementary school, and accessibility to such a school under public management for every child in the country. From the purely educational point of view, every consideration is in favour of making religious instruction, if given at all, an integral part of the normal school studies; it is the only way of securing its efficiency, at least as a form of instruction and an appeal to the understanding. Under the existing conditions, there is a virtual separation of this subject of instruction from the rest, and the consequence is that it is one of the least, if not the least, efficiently taught subjects in the elementary school. So long as this separation continues, some Bible lessons will be given which resemble in intellectual quality such geography lessons as would be delivered by the believer in a flat earth.

While to the local education authority is committed the power, if it will, of incorporating religious instruction in the programme of every school under its management, the method of giving this instruction, and still more the specific character of the instruction itself, may assume one of two alternative forms. The local authority may keep the teaching entirely in its own hands; in which case the course must consist of instruction in the Bible, in the principles of the Christian religion, and in "personal and civic duty." Here again is evidence that the committee was fully mindful of its more strictly educational function. The report points out that, under the rules now in force in public elementary schools, while the inspector's supervision extends to whatever moral

[1] "Towards Educational Peace. A Plan of Re-settlement in English Elementary Education issued by the Executive Committee of the Educational Settlement Committee." 59 pp. (Longmans.) 1s. net.

instruction may be given, the religious teaching is outside his purview. The committee rightly fears the consequences of a divorce between the two kinds of instruction consequent upon a peculiar position being assigned to one of them, and therefore proposes that His Majesty's Inspector shall, on the request of the school authority, "ascertain by a study of the curriculum to what extent the course of religious teaching includes moral instruction in the subjects required by the Code." This is to insist upon the sound principle, somewhat unfamiliar in this country, that a school curriculum is one and indivisible.

On the other hand, the local education authority may decide not to give religious instruction in its schools. In such a case, the authority would be required to permit arrangements to be made "for the giving of religious instruction within school hours by organisations representative of one or more denominations, or of an association of teachers, which might be approved by the Board of Education for the area concerned," the expenses of this instruction being defrayed by the voluntary bodies undertaking it. Its particular denominational character would be determined by parental preference; where there was no expression of this preference by requisition to the authority, there would be no religious instruction.

Apparently it is not contemplated by the committee that in any area both the authority itself and the competent number of parents would fail to undertake the giving of religious instruction. If we read the report aright, the committee has no plan to suggest which would, in the circumstances supposed, permit the introduction of any form of religious teaching into the schools within the area. The history of some of the defunct school boards leads one to think that some local authorities would decide not to give religious instruction themselves, and if parents within the area of these authorities were indifferent, no religious teaching would be possible in the schools. Within such an area there would be a failure to ensure the committee's "second fundamental principle which . . . makes religious teaching an integral part of school life."

Objection has frequently been made in the past against any plan which involved the construction of a syllabus of religious knowledge by a local authority. "We do not want a County Council religion," it has been said. The committee has a plan by which this objection may be met. "For the purpose of furthering the provision and superintendence of religious instruction, a religious instruction committee (including persons of experience in the religious education of the young) should be appointed by the local education authority under a scheme drawn up by the authority and approved by the Board of Education." To this committee would be entrusted the duty of considering and occasionally revising the syllabus of the religious teaching provided by the authority; it would also make arrangements for the voluntary training of teachers of religious knowledge in schools, for organising collections of reference-books and for conducting special courses of study for teachers. The committee is of opinion that labours such as these would be welcomed by teachers who "find themselves hampered in the work of religious instruction by imperfect Biblical knowledge." Perhaps an even wider sphere of usefulness might be found amongst those who, in schools and elsewhere, do not feel at all hampered in giving teaching of that kind, notwithstanding this special form of ignorance.

The suggestion of an *ad hoc* committee not necessarily confined to members of the local authority is repeated in another connection. It is recommended that associations be formed representing groups of non-provided or voluntary denominational schools with which the authority would negotiate, whenever it was intended to withdraw public support from a school, or schools, within such a group. Everything would depend on the constitution and powers of these *ad hoc* bodies. So long as they were advisory only, no insuperable objection would seem to lie against them. If it were sought to make them statutory committees with even limited executive powers, they would immediately become obnoxious to the popularly elected, representative authority. The unwillingness of some county councils to include in their education committees others than members of their own body, and the very general tendency to concentrate all forms of municipal administration in one sole authority, indicate possible opposition to these particular suggestions of the report.

It is an essential principle with the committee that "an elementary school under public management should be accessible to every child." The realisation of this fundamental condition of a national system of education is thwarted by the "voluntary system" and by the conscientious objector. Yet both obstructives are consequences of the nation's past, and both, though in different ways, bear witness to that other essential principle of the committee's plan already considered, the organic relationship of religious instruction to the rest of the curriculum. Here, then, the committee finds its central problem. Neither its principles nor the circumstances of the case allow the heroic remedy of destroying or ignoring the voluntary system, or so much of it as has survived recent legislation. It is proposed that where the parents of 150 or more children demand a denominational school, the fabric of which the parents, or their sympathisers, are ready to provide and keep in repair, the local authority shall recognise and maintain such a school, so long as it is efficient, required by parents, and supported, so far as the rates are concerned, at a cost not exceeding the average charge for a school of its size.

No difficulty is anticipated by the committee in carrying out this provision in thickly populated districts. The crux of the problem is the "single-school area," the district "in which the interests of efficiency in general education preclude the recognition of more than one school." Roughly speaking, in existing circumstances, this school is nearly always a Church school. The committee

proposes to transfer this school to the local education authority, at a fair rental; if after a period of two years its managers decline to make the transfer, they will, of course, receive no support from the authority, whose duty it will be to erect and maintain a rival establishment. The committee gives reasons for thinking that this unedifying state of affairs will seldom, if ever, come about. The transferred school would, in the ordinary way, give that Biblical, Christian instruction already mentioned as distinguishing the school provided and directly controlled by a local authority. But if the parents so desire, and if the cost be voluntarily defrayed, the authority must also permit denominational religious teaching to be given in accordance with the trust-deeds of the school or its established custom.

The committee remarks that "if the plan suggested . . . is adopted, the religious bodies (and especially the Church of England) will be giving up a considerable number of the schools now under their direct control." The actual number is not known, and it is one of the suggestions of the report that an inquiry should at once be set on foot by the Board of Education in order to discover "where it would be necessary to have council schools in order to bring an elementary school under public management within the reach of every child." No doubt the number of single-school areas in some parts of the country is considerable.

If it be asked, what is the "consideration" in exchange for which the transferred schools are to go so nigh effacing themselves? the reply is not easily found. These schools are between hammer and anvil: they surrender their distinctive character, or they suffer death, lingering or sudden, according to circumstances. But, as we pointed out in these columns four years ago, that is only the logical outcome of the Education Acts of 1902–3, the tendency of which was to bring the voluntary system to an end, slowly but surely. The committee's report only emphasises an accomplished fact.

The third of the committee's principles is liberty of conscience for teacher and for taught. A child may be withdrawn by its parents from religious instruction, may attend religious or moral instruction provided outside the school buildings during school hours, or may receive "secular" instruction during the time of religious teaching, if its parents so desire. The teacher in any school under public management must not, as a condition of his appointment, be required to belong, or not to belong, to any religious body; neither may he be required to give religious instruction. Further, it is proposed to appoint a small Court of Appeal at the Board of Education, consisting of a legal member and two assessors, one with experience as a teacher, the other familiar with local educational administration; this Court would investigate any case of alleged unjustifiable dismissal of a teacher. Truly, our religious divisions are rightly described as "unhappy," when so drastic a rule as this, governing a schoolmaster's relations with the religious education of his own pupils, must be laid down, if his professional career is to be duly safeguarded!

The same disability to give religious instruction other than that provided by the local authority attaches to the head-teachership of a transferred school; but an assistant teacher in a school of this kind "should be free to offer himself for any part of the religious instruction which may be arranged for the children attending the school." Teachers in secondary schools who are happily without first-hand acquaintance with the "religious difficulty" may very profitably meditate on the committee's *caveat* which follows the words just quoted: "It should be left to the discretion of the local authority to decide whether the risk of provoking religious controversy makes, in a particular school or district, some other arrangement preferable in the interests of the unity of school life."

Those who are unmoved by the committee's plea that public education is incomplete apart from religious teaching may be inclined to ask, why take such a world of pains to retain so embarrassing a study in the curriculum? The report anticipates the question without stating it. The reply, briefly summarised, is that the denominational school, besides answering to a distinct requirement in the national life, is a guarantee that a healthy diversity will be retained amongst English schools, a diversity which the committee believes "has on the whole been a benefit to English education." The need of diversity was never so pressing as it is to-day, when the whole of our educational system is threatened by the barrenness of uniformity, as the result of the growth of a great body of officials engaged in local educational administration. Between them and their colleagues of Whitehall, individuality of aim and of method has but a precarious hold upon the work of the schools. Even the embarrassments of the religious difficulty, provided some satisfactory mode of dealing with them be found, are not too heavy a price to pay for a wholesome variety in schools. The school which can keep itself free from the official net preserves some measure of liberty also for those that are entangled.

In this connection, it is interesting to note that the committee recommends that "in all questions of law there should be an appeal from the Board of Education to the High Court of Justice." There has been of late years a most disquieting readiness in Parliament to sacrifice the liberty of the subject and its safeguard, which lies in recourse to the Courts, whenever the supposed interest of a Government Department seemed to require it. The Board of Education has been prominent amongst Government offices anxious to be free from the criticism of the Common Law, and to become entrenched behind a rampart of privilege. The committee's suggestion is a timely warning on this head which the public generally will do well to apply even more widely.

The report frankly admits that a resettlement of elementary education such as the committee desires will involve considerable outlay of public

money. In the existing condition of the national finances and in view of the heavy expenditure already incurred on behalf of elementary education, it follows that some retrenchment of that expenditure must precede the initiation of any scheme such as the committee's. Many persons who know the facts believe that a substantial reduction might be effected, without any injury whatever to the education given in the schools, but rather to its benefit, if the community employed a much smaller number of officials administering education centrally and locally, and if less were spent upon bricks and mortar. Why build a school which will be good structurally for one or two centuries of life, when it will inevitably be obsolete in a generation?

But the committee's plan cannot be carried out by merely spending money. To all readers of the report it must be obvious that the success of the proposed scheme must depend principally upon its securing goodwill all round. The names of the members of the committee inspire confidence in their earnest desire to solve their problem honestly and in a manner educationally satisfying. But prominent "Blacks" and "Whites" are not amongst these names. There are those who see some one aspect of the education problem with so great an intensity of conviction that they seldom realise that it has any other aspects. Those who enjoy a fuller vision (and perhaps also a cooler temperament) must appeal to these "Blacks" and "Whites" for a less exclusive consideration of the religious difficulty. If unhappily the appeal is disregarded, the irreconcilables will have to be reduced to silence, or the open wound will remain and English education be still further hindered at a time when nothing could be more damaging to the national life.

EDUCATION AT THE JAPAN-BRITISH EXHIBITION.

By FRED CHARLES, B.A.
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WHILE the value of such an exhibition as that at Shepherd's Bush is largely educational and most of the exhibits have their educative influence, yet there is an "Education Section." The general exhibits offer more variety and are of wider interest; they, indeed, offer more opportunity to the specialist to advocate his own particular subject, whether it is science, art, or commerce. It is, however, with the "Education Section" that this article is concerned.

It must be acknowledged at the outset that the British exhibits are far less complete than the Japanese. Apparently no attempt has been made to represent British education in its entirety. It is represented in exhibits by the Board of Education, the Geographical Association, and the London County Council. That of the London County Council alone has any claim to completeness. In that of the Board there is nothing to show the extent of education in this country, its scope, or its excellence. The exhibit under the name of the Board consists of loans from other Government Departments, notably the Meteorological Office. Now, while these exhibits are extremely interesting, they do not give any broad idea of English education.

The Geographical Association — the Royal Geographical Society is not considered here because its exhibit extends far beyond the world of school—shows some excellent examples of school work; most of it is based on school journeys or on the life of school camps. Of this type of work, perhaps the most interesting is the exhibit based on a school journey in the Lake District. The outline drawn up by the organiser shows the scope given by such a journey. There is great variety; geography and geology receive, of course, but are not allowed to monopolise, attention. Biography and literature have their place; the history arising from local associations is considered; the history of Furness Abbey raises the whole question of life in the abbeys and the history of the monastic and mendicant orders as well as that of the dissolution of the monasteries. The buildings and ruins visited lead naturally enough to discussions of the characteristic features of the Saxon, Norman, Transition, and Early English styles of architecture. Art was not overlooked: the Duddon Sonnets were illustrated; outlines of mountains were drawn, and details of the architectural characteristics of the places sketched. Here, indeed, is enough to provide material for a long course, variety enough for the most catholic of tastes; enough, too, to surfeit an ordinary child in the hands of any but the most sympathetic of teachers. Happily the children's note-books are also available, and we can see the results recorded day by day. That journey must have been an excellent holiday full of strenuous work.

The class-room work, such as the construction of a panorama picture from a contour map, and daily exercises on the weather reports, are all interesting and may lead to excellent results; but the penmanship points to the conclusion that we are losing that form of genius which is the art of taking pains. Nor does this class of work appear to be representative of that at a large number of schools: it all bears the impress of a small band of enthusiasts, enthusiasts who are doing excellent work, but whose leaven is only just beginning to have its effect.

The exhibit of the London County Council is much more representative. Educational work is divided into three parts—elementary, special, and higher. A clear idea of our elementary-school buildings is given by the plan and elevation of a recently erected school. The progress of education in London is shown in a number of graphs and diagrams. Photographs of classes at work, of school gardens, of open-air schools, of school journeys, of vacation schools, and of play centres indicate some of the more recent developments of elementary education. To illustrate class-room work is difficult, and but little attempt is made.

Perhaps the most popular exhibit under the heading of elementary education is the case containing specimens of needlework and knitting, dressed dolls, and all sorts of furbelows and frills dear to the feminine mind. A good second to this in popularity is the collection of woodwork and metal-work.

Special schools lend themselves to exhibition purposes mainly because such a large part of their work is practical. Besides specimens of laundry-work, dressmaking, tailoring, woodwork, and metal-work, there are results in boot-making, basket-making, and the making of artificial flowers.

Higher education under the Council includes technical institutes, schools of arts and crafts and trade schools, as well as secondary schools; but in spite of the excellence of their exhibits the former will be omitted here, and the latter alone considered. The different types of school buildings are shown by plans, elevations, and photographs. Classes at work in various subjects have been photographed, and specimens of work are shown. Such ordinary subjects as writing and arithmetic have no place; nature-study, needlework, drawing, and design occupy most space. There is not very much pupils' work in nature-study; a syllabus is prefaced by an outline of the purpose of the course. Its aim is to awaken interest in various forms of life, to cultivate keen observation, and to help the children to acquire a power of expression sufficient to enable them to describe what they see. The plan provides for one and a half hours a week in the lower forms, and suitable subjects are selected for each season.

Needlework, woodwork, and metal-work are again in evidence: skill in these branches of study produces results which appeal to the eye. A very attractive group of exhibits is the paper-cutting and pattern-making of the lower forms and the designs of the upper ones; all show artistic taste and originality, while some of the designs are so well adapted to curtains, for instance, that they indicate a skill that, later in life, might well be turned to account in industry.

Perhaps the most interesting of all the secondary-school exhibits, however, are the illustrations of well-known songs, stories, and plays. Those in black and white include a scroll round the words of "Tom Bowling"—a flowing, rolling pattern, fitting the subject, and showing an appreciation of the words in the suitability of the design. "The Treasure Ship" and "The Inchcape Rock" are other subjects skilfully treated. Lady Macbeth, the Lady of Shalott and the sorrowing wife, now widow, who "nor moved nor uttered cry" "when home they brought her warrior dead," are depicted in colours, and show that boys are not lacking in appreciation of the feelings and circumstances of the women of fiction. Such work as this, apart altogether from its artistic worth, indicates a thoroughly good grasp of the subjects read, and the cultivation of a power of expression sometimes more powerful than words.

The exhibits from Japan may be divided into two parts: that of the Department of Education and that from various towns and schools. Both are complete; together they give a wonderfully clear insight, not only into the instruction given in Japan, but also into the spirit of Japanese education. The Department's exhibit consists of diagrams of statistics, pictures for giving moral instruction, text-books for all grades, reports of progress, tables showing the correlation of schools of different types, the curriculum in the various schools, and pictures, photographs, and objects illustrating the historical development of education and science. The diagrams of statistics show that education, so far as the standard of the middle school at least, is rapidly becoming universal in Japan; the school attendance is now 97 per cent. of the school population, and has been steadily increasing since 1904–5.

The pictures for giving moral instruction in elementary schools inculcate such precepts as: study well and play well; be punctual; be diligent; friends help one another; be in high spirits; be healthy, polite, orderly. Some old friends reappear in Japanese colours—the hare and the tortoise, for example. A story less well known in this country is that of the little monkeys warming their hands at the brazier and climbing up to their disabled mother to warm her wound. But to appreciate the moral instruction given in Japan it is necessary to have the foundation on which it is built, and fortunately that is available. It is the Imperial Rescript on Education of 1890. Baron Kikuchi's translation is as follows:

"Know ye, Our subjects:

"Our Imperial Ancestors have founded Our Empire on a basis broad and everlasting and have deeply and firmly implanted virtue; Our subjects ever united in loyalty and filial piety have from generation to generation illustrated the beauty thereof. This is the glory of the fundamental character of Our Empire, and herein also lies the source of Our education. Ye, Our subjects, be filial to your parents, affectionate to your brothers and sisters; as husbands and wives be harmonious; as friends true; bear yourselves in modesty and moderation; extend your benevolence to all; pursue learning and cultivate arts, and thereby develop intellectual faculties and perfect moral powers; furthermore, advance public good and promote common interests; always respect the Constitution and observe the laws; should emergency arise, offer yourselves courageously to the State; and thus guard and maintain the prosperity of Our Imperial Throne coeval with heaven and earth. So shall ye not only be Our good and faithful subjects, but render illustrious the best traditions of your forefathers.

"The Way here set forth is indeed the teaching bequeathed by Our Imperial Ancestors, to be observed alike by Their Descendants and the subjects, infallible for all ages and true in all places. It is Our wish to lay it to heart in all reverence, in common with you, Our subjects, that we may all thus attain to the same virtue."

Pictures also illustrate the national character-

istics and the "Bushido" (Soul of Japan), but at the root of all is the message that this rescript conveys to a Japanese who holds, as his ancestors have held for nearly twenty-five centuries, the Imperial House in reverence.

The text-books and curricula may be passed over, but the samples of work in writing and composing English call for remark. The written characters show the capacity of the nation for patient toil, and the English composition, showing as it does an acquaintance with and a power over English idiom, speaks volumes for the knowledge and skill of Japanese teachers.

One part of this exhibit may fail in its purpose, not for any fault in itself, but from the difficulty of recognising power when in the features of men of a race so different from our own as is the Japanese; that part consists of the photographs of representative men of learning.

The other part of the exhibits from Japan, those from schools, now remain to be considered; Tokyo sends samples of work from all grades of schools; designs for handwork and sewing from kindergarten and elementary schools; a collection of songs from the ordinary, and dressed dolls from the higher grade schools. Kobe sends a booklet setting out the provisions of teaching, the principles of instruction, the disciplinary policy and the principal items of school government. The provisions of teaching insist on the importance of recognising local conditions and of studying the hereditary nature and environment of individual children; it contains also a paragraph on education by the order of seats, a method requiring of the teacher a very intimate knowledge of the children under his charge. The chapter on the disciplinary policy insists on obedience as the fundamental principle, on the cultivation of sincerity, on self-examination, and on the necessity for praise. Meetings of guardians are held to secure their co-operation.

Tokyo has, besides elementary and secondary schools, a normal school with practising schools, technical schools, and an imperial university. These send some wonderfully good machine drawing and models, as well as English composition. Some of the latter have an interest beyond that in the facility of the Japanese as linguists; they show to some extent that, in order to be a hero to the Japanese, a man must be a man of action.

From the Fourth Middle school at Tokyo comes, with the usual exhibits of wood-carving and metal-work, a model steam engine made by a fifth-year pupil.

The Commercial school at Nagoya City is a flourishing institution; photographs of various classes at work are accompanied by written lessons done therein. Specimens of statistical work relate to the school; one chart exhibits the attendance of the pupils for some years, another the number of students who have passed through the school, while yet another shows the number who have taken up particular kinds of work. The handwork of the school includes, besides the commodities which we recognise as typically Japanese, wool, clocks, and metal buckles and other fancy articles. Skill in penmanship is shown in statistical returns, and in a copy, a copper-plate copy, of "Rule Britannia."

In the needlework, in the paper-cutting, in mapping, indeed in all the work, whether of young or old, from elementary schools or from normal or technical schools, there is shown the artistic sense. The scheme of colour and the blending of delicate tones that seem so much less crude than ours are very noticeable, and are, so far as one can judge, inborn in the Japanese.

Athletics are by no means neglected: photographs of wrestlers, of swimmers using different strokes, of boating and of lawn tennis players, bring home the fact that no form of activity comes amiss to these wiry little men.

It is almost impossible to see on the same day exhibits of the same kind from two allied nations without drawing comparisons. In this case, it would appear almost invidious, so unequal are the exhibits of the two nations, but for the moral. The striking contrast is the care that has been taken to make the Japanese exhibit as perfect and complete as possible, the care exercised in the details of the pupils' work, the excellence of the penmanship, the skill in mapping. Care is the prevailing note in the Japanese exhibit. And the moral is, if one may be permitted to add it, "Wake up, England!"

THE NEW STATE EDUCATION.

By C. E. SHELLY, M.A., M.D., &c.
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THE Annual Report of the Chief Medical Officer of the Board of Education for 1908[1] is very interesting reading; for it is, in effect, a lucid and informing summary of the forces, scientific and social, which have resulted in a national realisation of the true meaning of education; of an awakening to the shortcomings of a system with which the country has been for too long content, of the unveiling of the national disasters to which it was too surely leading; and an analysis of the methods which have now been adopted to avert calamity and to ensure improvement.

The first eleven pages are concerned with a brief historical review of the development of school hygiene as the outcome of systematic study. In this country, at least, we should not forget that Robert Mulcaster, in the sixteenth century, and Locke towards the end of the seventeenth, had already insisted that the physical fitness and equipment of children lay at the root of education in its true sense. Frank in 1780, James Ware in 1812, and Lorinser in 1836, published reports of investigations which—sporadic though they were—proved that the problem was attracting attention and stimulating attempts for its solution; and, indeed, in 1840, four years after the issue of Lorinser's book, school doctors were appointed in certain Swedish training colleges. Gradually the mental

[1] Wyman and Sons, 8½*d.*

receptivity of the nations quickened until, in 1886, Cohn's classical inquiry into the eyesight of 10,000 school children in Breslau became both the beginning and the inspiration of the systematic and extensive researches into the physical conditions of school life which have formed one of the most salient features of modern educational progress. From that date the writings of many experts in diverse countries have contributed with increasing volume. For long, however, attention was chiefly centred upon the material conditions under which the child was taught and upon the school premises and equipment, without fully realising that the most complete reforms under these heads would fail to secure a final solution of the problem of school hygiene. The system introduced in Wiesbaden at the end of the last century, and speedily adopted throughout Germany, marked the introduction of a new conception and understanding of the problem; for it treats the child himself as the centre of interest, and his well-being as the object of reform, to which even the most satisfactory school environment can be no more than a means. It was, in fact, a general realisation of the basis of those more recent researches the results of which seem to indicate that the personal heritage of the pupil has far more influence in shaping his development, both physical and intellectual, than have the conditions of his environment. Hence, in brief, the institution of medical inspection of the scholar, the appointment of school doctors, and the medical supervision of school life.

Of this triad, the two first elements are as yet—and, for some time to come, must continue to be—mainly remedial in their operation, dealing with the detection and with the treatment of evils and disabilities which are already in existence, and that largely as the result of neglect and ignorance in the past. The third will be largely preventive, and should become increasingly so as time goes on. Dr. Newsholme points out that, while such questions as concern drainage, sewage disposal, water supply, housing accommodation, and the like will always call for close supervision and vigilant management, the centre of gravity of our public health system is passing in some degree from the environment of the individual, and from problems of outward sanitation to problems of personal hygiene. The science of preventive medicine, therefore, becomes the appropriate medium for dealing with the problems of hygiene in relation to the education of the child. Upon these considerations is based the opinion of the Board of Education that, in the nature of things, the new work must as far as possible grow out of the system of State medicine already in being. In other words, to the medical officer of health must pertain the duties called for in connection with the medical inspection and supervision of schools. To a very large extent this view has been acted upon throughout the country; and it is satisfactory to learn that the methods adopted within the various educational areas, in accordance with which the school medical officer is appointed, either to be under the supervision of the medical officer of health or to co-operate directly with him, have been found to work harmoniously.

Time and space would fail in any attempt to review all that is incorporated in the several sections of this report which deserves careful perusal. It would be too much to expect an elaborate array of what has hitherto been understood by the term "results" as the outcome of the first twelve months' working of a scheme which imports new principles into old methods, and has been obliged to evolve novel machinery out of discrete material. The first year's work in medical inspection, for example, does not, and cannot, reveal any new facts as to the physical condition of the people or furnish such a mass of evidence, one way or the other, as would satisfy the lugubrious expectations of the pessimist or justify a buoyant optimism. It is, however, no small thing that the work of the School Medical Service, which has now been organised under the Board of Education, is being strengthened and systematised, co-ordinated and correlated; and that much of it is already proved to be of value. Incidentally, it is also revealing how much still remains to be done. It is at least certain that, whatever be the academical or statistical value of medical inspection and school hygiene generally, it is yielding a substantial result in practical reform. It is contributing to a wider knowledge of child life than was obtainable in the past, and thus encouraging and fostering the highest kind of social development. It is securing the beneficent results of medical treatment to tens of thousands of school children. And the increased attention devoted to school hygiene—including the whole health conditions and physical training of the child—together with the influences thus brought to bear upon those parents most in need of enlightenment, is already beginning to bear fruit in a better conception of the true ends of a State system of education.

THE CALCULUS IN THE GERMAN SECONDARY SCHOOL.

By R. C. WALLACE, M.A., B.Sc., Ph.D.

ALTHOUGH the Regulations of 1901 still remain the official guide to the teacher of mathematics in the higher schools of Prussia, there are two distinct directions along which opinion has advanced since those regulations were framed. In 1905 the Association of Scientists met in Meran, and drew up a set of recommendations now known as the "Meraner Bericht." So far as the teaching of mathematics was concerned, these recommendations were a strong plea for "the strengthening of space-perception, and training in the habit of function-thinking." With the latter of these two tendencies we are more immediately concerned here. Of the former it need only be said that for the Unterstufe (first to sixth year of the secondary school) it was suggested that greater attention be paid to the use of models, to measuring and

drawing figures, and to estimating heights and volumes at sight; while in the Oberstufe (seventh to ninth school year) the simultaneous study of analytical and geometrical conics was to be accompanied by much practice in drawing, so that a clear mental picture might be got of the dependence of the form of the section, and the place of focus and directrix, on the position of cone and cutting plane. It was also recommended that the various methods of projection be made a subject of more thorough study.

It is, however, to the place of the function and the treatment of function variation that attention has chiefly been directed during recent years, and that has led in its turn to the consideration of the advisability of introducing the calculus into the work of the higher forms of all Prussian secondary schools. Perhaps the main supporter of the movement is Prof. Klein, of Göttingen University, who has discussed the question very fully in his book, "Der mathematische Unterricht an den höheren Schulen." He has not only formulated a scheme of work in which the conception of the function and its variation leads on to a two years' treatment of the calculus in the highest classes, but, under the direction of Profs. Behrendsen and Götting, of the Göttingen Gymnasium, he has also seen the scheme put into practice throughout all the stages of that school.

The introduction of Cartesian co-ordinates and of the graphical representation of the simplest functions should, according to Klein, be made in Obertertia, when the pupil is in his fifteenth year. Some idea of the variation of functions will have been obtained at an earlier stage, in the evaluation of algebraical expressions, where continuously varying values are given to the symbols involved. But it is in the last two years of the Unterstufe—Obertertia and Untersecunda—that the geometrical aspect is considered. Linear and quadratic equations, powers and roots, are taken up from this point of view; special attention is directed to the rise and fall of the curve, and areas are measured approximately. The introduction of Cartesian co-ordinates at this early stage involves the postponement of the treatment of logarithms to the Oberstufe, although, according to the regulations of 1901, logarithms should be taken up in Untersecunda; but the idea of continuity involved in logarithmic functions is considered sufficient ground why the graphical illustration of continuous functions should receive the first place.

So far the plan of work is very similar to what has in this country been for some years put into practice with the lower classes in mathematics. For the Oberstufe, however, Klein advocates the introduction of the differential and integral calculus, at any rate in Unter- and Oberprima; and even in Obersecunda the initial stages may be got over, though the actual symbols need not yet be used. This is a step in advance of the recommendations in the "Meraner Bericht," where the "possibility" of work in the infinitesimal calculus during the last two years of school life is mentioned; in educational circles the diversity of opinion on this matter was still too great to permit of any recommendation, and the teacher was left a free hand. But the question is no new one. For the last hundred years there have been educationists who have advocated the introduction of the calculus into the German schools; and in the early seventies of last century the Realgymnasium of Wiesbaden was famed for the advanced work carried on in this branch of mathematics. The regulations of 1882 and 1892, however, made it impossible for this subject to have a place in the curriculum of the Prussian "Real" schools, notwithstanding a good deal of opposition which this veto aroused both in the universities and the schools themselves. It is only owing to the special permission of the Minister of Education for Prussia that the reforms now described are being carried out in such schools as the Gymnasia of Göttingen and Münden, the Realgymnasium of Düren, and the Oberrealschulen of Kiel and Königsberg.

In the first year of the Oberstufe the exponential, logarithmic, and trigonometrical functions are taken up, together with certain aspects of quadratic equations with two unknowns. In geometry the easier cases of point transformation are considered as a generalisation of the simple function conception. Then in Unterprima the step is easy to the fundamental processes of differentiation and integration; the general methods grow out of work in which the pupil has already had ample practice—the determination of the area and the position of the tangent for all varieties of curves $y=f(x)$. For Oberprima there remains, especially in the case of the Oberrealschule, a wide application of the calculus to problems physical as well as mathematical; and the use of graphical as well as algebraical methods of solution is specially insisted on. At this stage the teacher who has the *facultas docendi* in applied as well as in pure mathematics—as an increasing number of Prussian secondary-school teachers have—has ample opportunities of enlarging the horizon of his pupils. On the side of pure mathematics the work may fitly culminate in the proof of Taylor's series (finite), and on the applied side in the deduction, from Newton's Law of Gravitation, of Kepler's Laws and the oscillation of the simple pendulum.

The scheme outlined above refers only to that part of the work in mathematics which lends itself to graphical treatment, and to which the methods of the calculus may be applied. As the time given to mathematics under the new scheme is as yet the same as under the regulations of 1901, viz., for the Oberstufe four hours per week in the Gymnasium and five hours per week in the Realgymnasium and Oberrealschule, it has been found necessary to cut out some of the work that formerly found a place in the curriculum. Especially is this the case with the theory of equations. Quadratic equations with more than two unknowns, higher equations reducible by special artifice to quadratic form, and cubic equations have all had to give way to the more prac-

tical methods of approximate graphical solution. The analysis required for strict proof of the Binomial Theorem for any index is also considered too difficult for the school stage. With these omissions, and owing to the systematic way in which the infinitesimal calculus is led up to through the junior forms, it has been found possible to parry the charge of overburdening the curriculum, a charge which is inevitable whenever a new subject is suggested for study in school.

Probably the most interesting way of describing the results that the system has produced already is to give some account of lessons which the writer has had the pleasure of hearing in the various classes of the Oberstufe of Göttingen Gymnasium. It must be stated at the outset that no text-book was used. A book for the Unterstufe on the new lines has been prepared by Profs. Behrendsen and Götting, in which the most intimate connection obtains between the algebraical and geometrical matter; and a book on similar lines is in course of preparation for the Oberstufe. As a rule, a member of the class carried on the work at the blackboard, with the aid of judicious hints from the teacher; it might be a piece of theoretical reasoning, or the application of the calculus to aid in the solution of a particular problem; but in all cases the boy was made to feel that he was carrying out a special piece of research of his own. Any new points that might arise were jotted down for future reference in note-books which served the purpose of general text-book.

A lesson which may be taken as a specimen of the work done in Obersecunda was the consideration of the graphical representation of $y = \log_{10} x$. In a former lesson the graph had been obtained as a locus of points which were found by calculation to satisfy the equation; from an accurately drawn figure the truth had been arrived at empirically that the tangent to the graph at any point (x, y) makes with the x axis an angle the tangent of which is a constant multiple of $\frac{1}{x}$. With the help of this fact a simple graphical artifice now enabled the pupil to draw the tangents at the various points satisfying the equation, and the curve was thus obtained as an envelope of a line satisfying a given condition. The accuracy of extrapolation between unit values of x was then examined, the results obtained by measurement being compared with the values as given in a book of tables. Besides the exercise in careful drawing to scale and accurate measurement that the lesson involved, a groundwork was being systematically laid for the future study of the calculus.

In Unterprima a very interesting lesson was given on the parabola, as an application of the processes of differentiation and integration. The equation being taken as $y^2 = 2px$, the points on the curve were quickly obtained by the geometrical construction for the mean proportional $2x : y :: y : p$. From the result of the differentiation $\frac{dy}{dx} = \frac{p}{y}$, it was seen that the same geometrical construction gave, not only the points on the parabola, but the tangent at each point as well. The evaluation of $\int_0^x 2px\,dx$ was then carried out, and there was given out for homework an integration for another parabola between definite numerical limits. Great facility was shown in carrying out the operations involved here, and it was very evident that the boys were impressed with the way in which this new instrument could be used to work hand in hand with pure geometry.

During an hour's work in Oberprima three examples illustrative of the application of the calculus to physical problems were taken up. The first was the consideration of simple harmonic motion, a point moving uniformly round a circle being viewed as projected on a diameter. The acceleration at a given point was obtained, and the velocity calculated as $\int (\text{acc.})\,dt$. The distance was then obtained as $\int (\text{vel.})\,dt$. The results were compared with those obtained geometrically and graphically. In the second example, the pupils had to find the shortest distance from a point to a line and back to a second point, the physical reference to the reflection of light being first explained. The distance was formulated analytically in terms of a variable x differentiated through x, and the result equated to 0. The geometrical interpretation of the result served as a confirmation of its validity. As a third example there was calculated by integration the moment of inertia of a uniform thin rod about an axis through one end perpendicular to the rod.

From these descriptive notes an idea will be obtained of the type of work that is being carried on in those schools that have adopted the new methods. When it is kept in mind that in the case of all the lessons described the calculation was carried out by the boys themselves, and the teacher simply interposed to keep them on the right lines, it will be seen that the pupil on leaving school possesses not only considerable manipulative power, but also a fair idea how the calculus is to be applied; he is already in a position to attend with advantage the more advanced courses in the university. Although the above description refers to a Gymnasium, the centre of the new reforms will be the Oberrealschule, where a total of forty-seven hours per week for the nine years is given to mathematics, as compared with forty-two hours in the Realgymnasium and thirty-four hours in the Gymnasium. Indeed, it is proposed by Klein to reduce the time given to mathematics in the Realgymnasium by six hours, thus placing it in that subject practically on a footing with the Gymnasium. If those six hours were given to science, the Realgymnasium and Oberrealschule would have respectively thirty-five and thirty-six hours for the teaching of science, but the latter type of school would be *par excellence* the school for the training of mathematicians.

Outside Prussia there are not a few schools in Germany where the calculus is taught, in some

cases even more fully than in the scheme outlined above. This is notably the case in the Oberrealschulen of Württemberg, where in the highest class no fewer than nine hours per week are given to mathematics; three of these are claimed by the calculus and two by analytical geometry. Naturally science suffers in consequence, only three hours per week being given to physics and chemistry, and two to nature-study. But, as in the case of one non-Prussian school at any rate, exceptionally good work in science may sometimes be combined with comparatively advanced study in mathematics. In the Oberrealschule vor dem Holstentore in Hamburg, seven hours per week, exclusive of time for practical work, are given to the teaching of science in the three highest classes. It is still found possible to give five hours to mathematics, with two hours optional for geometrical drawing; and a fair proportion of the time is taken up with the teaching of the calculus.

It is undoubtedly the case that the general adoption in school of the graphical method of representing algebraical functions has taken place earlier in this country than in Germany; but the Germans are going a step further in showing that by the aid of this method the calculus in its earlier stages may be made a very valuable part of the school curriculum. The future will decide whether the success attending the experiment will be sufficient to justify its universal introduction into the schools of that country and of this.

PICTORIAL AIDS TO THE TEACHING OF HISTORY.

By F. J. C. HEARNSHAW, M.A., LL.D.

Professor of History in Hartley University College, Southampton.

THOSE who have read Bunyan's "Holy War"—superior as an allegory to the "Pilgrim's Progress," except that its theology is more tangled—will remember that the lost city of Mansoul could never have been recovered by the armies of light if no more than one of its five gates had been assailed, and, further, that of all the gates of Mansoul the Eye Gate was the one easiest to carry. Now teachers of history, whose educative task may be described in one of its aspects as a storming of the citadels of ignorance, are generally content to hammer away at the Ear Gate. They manifest commendable zeal and persistence, and since like Homeric heroes they are *βοὴν ἀγαθοί*, there is in their operations much of the clang and circumstance of war. But too often their attack is ineffective through lack of support at other vulnerable points, and rare indeed is it for them to achieve a greater success than this: that after long years of pounding they are permitted to make a temporary lodgment in a slummy purlieu of the city on condition that they stop their noise. They attain a military triumph similar to the judicial victory of the importunate widow.

How often do teachers of history envy the resources of their scientific colleagues! They have nothing in all their pedagogic armoury which arrests the attention as does sulphuretted hydrogen; they cannot awaken a sleeper as can the possessor of an electric battery; they are not able to annihilate the forces of indifference as are those who can bring to play upon the Eye Gate the heavy artillery of modern scientific apparatus. The truths of science are permanent, the facts of nature are present facts, the forces of nature operate ceaselessly, experiments can be repeated as often as desired. But history deals with facts of the past, with events that can never be repeated, with incidents that no man living has seen or can ever see. Its only present and existent facts are documents. Is it, then, impossible to make any effort to secure by way of the Eye Gate admission for history and its regiment of lessons?

That it is not impossible has been amply demonstrated by some entirely successful attempts that have recently been made. It will be enough to enumerate a few. First, historic relics are in this country fortunately not rare. Prehistoric flints, Roman coins, Saxon weapons, Norman churches and castles, Plantagenet armour, Tudor costumes and furniture, and countless survivals of the later centuries are being used with admirable effect wherever they are available for the purpose of bringing home to the youthful mind the reality of the days of old. In Germany the provision of specimens and models of things antique is, however, much more a matter of care than it is in this country. The wonderful series prepared by F. Rausch ("Modelle zur Veranschaulichung vaterländischer Kulturgeschichte") contains many items which serve equally well to illustrate the development of English civilisation.[1]

Secondly, historical maps and atlases are much more freely used than was formerly the case. Dr. Gardiner's "School Atlas of English History" still holds the field in this country; but we need something both a little cheaper and a good deal fuller. For general European history we are still forced to send our scholars to F. W. Putzgers's "Historischer Schul-Atlas." It is, however, in respect of historical wall-maps that there is the most deplorable want. They simply cannot be obtained in England. A few can be got from Germany; *e.g.*, the excellent classical series of H. Kiepert ("Schul-Wand-Atlas zur alten Geschichte") and the equally fine collection, designed mainly to illustrate German history, issued by Baldamus ("Sammlung historischer Schulwandkarten"[2]). When will some English firm of cartographers come to the help of teachers of English history and provide a thoroughly good series showing both permanent physical features and temporary political arrangements?

Thirdly, historical time-charts are coming into use and are serving a good end. But I will say

[1] Procurable through W. Muller, 16, Crape Street, New Oxford Street, London, W.C.
[2] *Ibid.*

no more of these, as I dealt with them fully in a recent article in this magazine.[1]

Finally, historical pictures are being produced or reproduced in great and increasing numbers, and it is to these that I now wish more particularly to refer.

There can be no doubt that pictorial representation immensely facilitates the realisation of a historical scene. The granting of Magna Carta becomes an unforgettable thing when the descriptions of the text-book and the story told by the teacher is illustrated by an artistic reconstruction of the incident. But just because pictures make impressions, it is important that they should be not too numerous and not too bad. Just as the *Daily Graphic* tends to defeat its graphic purpose by being daily, so does the publishers' ideal of "a picture on every page" frustrate the end of education. Eye Gate becomes congested. Further, it is better to have no picture of the great concourse of Runnymede at all than to have one in which King John is depicted in the act of signing Magna Carta with a quill pen. It is undesirable to occupy Mansoul with the legions of error. The art of book illustration, to mention one notable example, has been brought to a high state of perfection by Messrs. Thomas Nelson and Sons, whose admirable "Highroads of History" series is worthy of special remark. The distinguishing feature of the ten volumes of this series is their excellent reproductions in colour of the great historical pictures of our leading public art galleries. The first volume may be taken as typical. It is thus described in the catalogue: "Tales of the Homeland; simple stories from British history, a famous picture being made the starting-point of each tale. This volume includes tasteful coloured reproductions from works by Maclise, Leighton, Watts, Wilkie, Gilbert, Yeames, Lucas, &c., as well as numerous black and white illustrations of the same high-class character" (price 10*d*.).

In conjunction with this series may also be mentioned the set of six "Historical Albums," edited by Miss C. L. Thomson, and published by Messrs. Horace Marshall and Son at 3*d*. each. All these relate to the period 1272–1399, but I understand that if the sale of these justifies the experiment the rich materials of the later periods will be drawn upon. These little "albums" contain nothing but pictures, which are chosen carefully, mainly from contemporary sources. The first two albums illustrate architecture, the second two social life, the fifth presents portraits, the sixth scenes and incidents. Teachers who follow the biographical method of instruction and desire a collection of the "counterfeit presentments" of leading English men and women will, of course, turn to the invaluable "Historical Portraits," selected by Mr. Emery Walker and described by Mr. C. R. L. Fletcher. One volume, covering the period 1400–1600, has already appeared (Clarendon Press, Oxford; 8*s*. 6*d*. net): two other volumes are in preparation.

[1] THE SCHOOL WORLD, April, 1909.

When we turn from the consideration of historical illustrations contained in books to note those pictorial aids which are adapted to use in class-teaching or are fitted to adorn the walls of the schoolroom, we find that much good work has been produced by English publishers during the past two or three years. So many excellent wall-pictures are now available at a comparatively low cost that there is no reason why the history class-room should not be made a gallery fitted with works of art which, like windows, open up views of the great scenes of distant days. The following are—so far as my information goes—the seven chief English series at present available.

(i) *The Scholar's Cartoons:* a series of decorative lithographs illustrating great events and incidents of British national life, designed by eminent artists and reproduced with the advisory assistance of educational and artistic authorities, by Mr. F. Hanfstaengl (16, Pall Mall East, London, S.W.), at the price of 5*s*. 6*d*. each. Up to the present fourteen have been published. Ten of them are ordinary lithographs reproduced in effective colours from designs by Messrs. John Hassall, Walter Crane, Gerald Moira, L. Campbell Taylor, and C. M. Park. They depict scenes from the epochs of the early Britons, the Romans, King Arthur, the Crusades, the Canterbury Pilgrims, the Armada, ending up with the first steamboat and the first steam railway-engine. The remaining four are what are called auto-lithographs, and they are specially remarkable not only for their peculiar artistic effect, but also because they are among the first, if not indeed quite the first, specimens of a class of work hitherto foreign to England. The key drawing and the colour designs are in these auto-lithographs done directly on the stone by the artist himself, and this is supposed to impart a freedom and quality not obtainable by any other form of cheap printing. In this novel method are produced two cartoons by Mr. Frank Brangwyn, viz., "Columbus Sighting the New World" and "The Port of London"; and two by Mr. Spenser Pryse, viz., "Phœnician Traders" and "Roman Wall-builders." Apart from this series of fine cartoons specially intended for educational purposes, Mr. Hanfstaengl has, of course, among his famous photogravures many magnificent reproductions of the historical pictures in the National Gallery, the Tate Gallery, and other great public and private collections.

(ii) *Longmans' Historical Wall-pictures:* "reproduced in colour from paintings from authentic sources by H. J. Ford; a series of twelve pictures illustrating British history from Roman times to the present day," published by Messrs. Longmans, Green, and Co., at 2*s*. 6*d*. each, or 35*s*. for the complete set of twelve in portfolio. The subjects dealt with are: (1) the Roman wall; (2) Augustine preaching before King Ethelbert; (3) a Danish raid; (4) Harold's last stand at Senlac; (5) Richard Cœur de Lion's sight of Jerusalem; (6) King John's sealing of Magna Carta; (7) Henry V. at Agincourt; (8) the Armada in the Channel; (9) Charles I.'s attempt

to seize the Five Members; (10) Wolfe on the Plains of Abraham; (11) Trafalgar; (12) the *Victory* and the *Dreadnought*. Both in historical accuracy and in artistic merit these bright and varied pictures leave little to be desired. They depict the old world, it is true, at its best and busiest and gayest; but it is, of course, the sunnier and more splendid side of things that ought to be shown to children. Messrs. Longmans also have in process of publication a series of portfolios of *Historical Illustrations*. Each portfolio contains twelve drawings relating to a single century, beginning with the eleventh. The drawings, which have been made from original sources by Mr. T. C. Barfield, depict for the most part architecture and costume. The size of the portfolio is 12 by 9 inches, and the price only 2*s*. 6*d*. each.

(iii) *The "A. L." Historical Incidents*, edited by Mr. Alfonzo Gardiner, and published at 4*s*. each, or in sets of six on top-lath at 13*s*. 6*d*. the set, by Messrs. E. J. Arnold and Son, Leeds. Thirty pictures are now included in this series. They are of unequal merit. Some, such as that depicting the escape of Mary Queen of Scots from Lochleven Castle, are very good; in others, such as that supposed to illustrate ancient British life, the attempt to crowd all ascertainable archæological detail into one canvas has caused such neglect of artistic possibility and larger historic truth as to produce results the reverse of satisfactory. The danger of the inculcation of historical error by means of pictures is well illustrated by No. 20 of the series. This professes to represent "The First House of Commons, 1265: Simon de Montfort addressing King Henry III." There was, of course, no House of Commons as a separate institution in 1265. If there had been, it would not have been presided over by the King in any circumstances, least of all in those of January, 1265, when Henry III. was a prisoner of war. Further, not even in the first House of Commons would you expect to find, as you do in this picture, an earl speaking, with a mitred bishop backing him up. Far better have no pictures at all than one so misleading as this. Messrs. Arnold also publish a cheaper series of twelve pictures at 2*s*. 6*d*. each.

(iv) *The Viaduct Series of Historical Pictures*, twelve in number, "specially painted by a well-known artist, an exhibitor at the Royal Academy," and "printed in sepia tones by the collotype process," published by the Educational Supply Association (Holborn Viaduct, London) at the price of 2*s*. 6*d*. each, or in sets of six mounted and hung from one roller, 16*s*. the set. These are all very beautiful pictures, having the conspicuous merits of simplicity and directness. They depict great incidents without superimposing a mass of antiquarian detail. Thus they convey their lesson immediately and effectively without the aid of the explanatory handbooks which the composite patchwork pictures require. The scenes represented are: (1) St. Augustine preaching the Gospel; (2) King Alfred and the Danes; (3) Battle of Hastings; (4) John sealing Magna Carta; (5) Simon de Montfort and Henry III.; (6) John Wyclif and his poor preachers; (7) Earl of Warwick conducting Henry VI. from the Tower; (8) Cranmer going to prison; (9) the Armada; (10) Gunpowder Plot; (11) landing of William of Orange; (12) death of Nelson. In the case of the first picture one is tempted to ask: What is the language in which the missionary is addressing the Jutish king and his attendants?

(v) *Philip's Series of Educational Pictures*, published by Messrs. George Philip and Son (32, Fleet Street, London E.C.). This series comprises twenty-four pictures (price 1*s*. 3*d*. each, or 20*s*. the set in box) relating to British history, and another twenty-four (at the same price) relating to Colonial history. Most of the subjects are geographical. The first set ranges from Stonehenge to Waterloo; the second from the Khyber Pass to Jamaica. The size of the pictures is 17 by 13 inches, but I can say nothing respecting their merits, as I have not seen any of them. The same publishers also announce pictures illustrating the history of civilisation in Europe, and pictures illustrating ancient history.

(vi) *Wall-pictures for History Lessons*, published by Messrs. Horace Marshall and Son, at 2*s*. each, or in sets of six at 9*s*. 6*d*. So far only six of these have been issued. They all relate to the old English period. Their aim is to depict, not historical incidents, but special details of the life of bygone days. This purpose is sufficiently indicated by the titles, which are as follows: (1) Old English byrnie and shield; (2) drinking horn and Alfred's jewel; (3) Viking ship; (4) Mediæval harvesting; (5) William of Normandy crossing the Channel, a scene from the Bayeux tapestry; (6) death of Harold, from the same. All these pictures, it will be noted, represent actual relics of the age in question.

(vii) *Cassell's Coloured Historical Cartoons* published by Messrs. Cassell and Co. (La Belle Sauvage, London), at 2*s*. each unmounted, or 5*s*. each mounted on rollers and varnished. Only three are announced at present, viz., the landing of the Romans in Britain, by W. Paget; the signing [*sic!*] of Magna Carta, by C. Gregory; and Queen Elizabeth at Tilbury Fort, by E. Blair Leighton. These are large pictures, 45 by 35 inches, but of their merits I am unable to speak, since my sole knowledge of them is derived from a catalogue.

Such are the leading English series. But I must not close this article without mentioning a few notable foreign series.[1] From France comes the "Tableaux muraux d'Histoire de la Civilisation Française," prepared by MM. Lavisse et Parmentier, and published at the Librairie Armand Colin. The German series are numerous. Among the more notable are the Lehmann series of "Kulturgeschichtliche Bilder für den Schulunter-

[1] Fuller particulars can be obtained from Mr. W. Muller, at the address given above, through whom, moreover, the pictures themselves can be obtained.

richt"; the Lohmeyer series of "Wandbilder für den geschichtlichen Unterricht nach Originalen hervorragender Künstler"; and, finally, the Lange series of "Bilder zur Geschichte; ein Zyklus der hervorragendsten Bauwerke aller Kulturepochen."

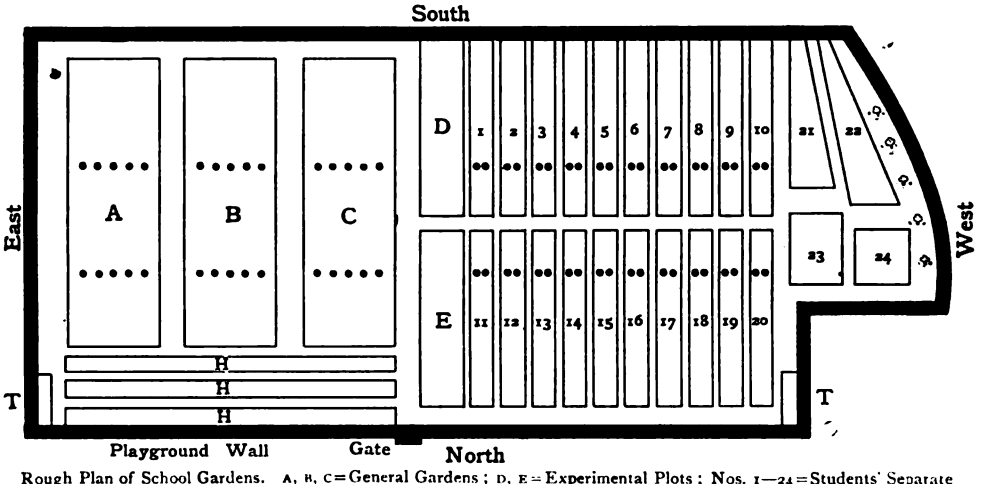
SCHOOL GARDENS.

By the Rev. ALFRED THOMPSON.

BRITAIN, slow to adopt an innovation, usually makes rapid headway once she has done so. The cultivation of school gardens as part and parcel of primary and secondary education is a capital instance of this. For years we lagged behind Germany and other countries, but as soon as school gardens had proved their educational value they increased surprisingly in our midst. Even a mining, industrial county like Staffordshire now boasts of 138 gardens attached to its primary schools.

In a former issue of this magazine[1] Miss Sunderland-Taylor pointed out that school gardening, in addition to fostering a love of gardening for its own sake, affords a valuable artistic and scientific training, and unfolds many high moral lessons. She also referred to its value as a co-ordinating factor in education; and the extension of school gardens has served to bear this out to a gratifying degree. There is hardly a subject in the time-table but may be given a touch of actuality by occasional illustration from the school garden. Drawing, brush-work, and nature-study receive continuous help from this source, and all departments of the primary school (boys', girls', and infants') draw on the herbaceous borders and the vegetable plots for the furtherance of their ends. The proximity of a number of small plots, each of the same size, and each with equal and parallel rows of crops, offers an admirable set of ready-made diagrams for teaching the fundamental laws of arithmetic; and with the added advantage that results can be proved to the eye. The counting, weighing, and measuring of produce, the measurement and calculation of areas, and kindred matters connected with arithmetic, are suggested on the spot, and useful lessons may be given on approximate ratios of weights and measures, such as "pounds" in terms of "pints," "bushels," &c. When mensuration, botany, chemistry, or physics forms part of the curriculum, the school garden is of the utmost convenience and value, especially if some section of it is reserved for purely experimental purposes. Many an interesting sidelight on history, geography, and literature may be obtained from this humble strip of soil, with its many secrets of romance and daring, of industry and research, with its stories of past ages and distant climes. For example, how instantly the potato suggests Sir Walter Raleigh, the chrysanthemum Japan, the daffodil Wordsworth, and so on. School carpentry has also an excellent opening here, for labels, pegs, frames, trellises, &c., are in constant demand, and should, where possible, be made by the boys, who will also repair and paint their barrows, tool-shed, fences, &c. In short, the school garden is a splendid rallying-ground for the co-ordination of studies.

A typical school garden near the residence of the writer provides training for forty-two boys (aged eleven to fourteen) and twenty-four students who attend evening continuation classes. Some account of the cost, laying out, and working of this garden may be of use to those who, possessing an open mind, have not yet embarked on this interesting enterprise.[1]



Rough Plan of School Gardens. A, B, C = General Gardens; D, E = Experimental Plots; Nos. 1—24 = Students' Separate Plots; T = Tool-shed; H, H, H = Herbaceous Borders.

The garden covers about an acre of land, being 100 yards long and 50 wide, and, but for a triangular extension at one end, forms a rectangle. It has a five-foot stone wall on one long and one short side, a hedge on the other long side, and is quite open to a cultivated field on the other short side. The site is maturing as building land. The rent charged is some £3. Before the pupils took the land in hand a portion of it was double-dug at the cost of the Education Committee.

The sole entrance to the garden, and also the sole exit, is a small padlocked gate near the centre

[1] See THE SCHOOL WORLD, November, 1906, "The Formation and Use of School Gardens."

[1] I have to acknowledge my indebtedness to Mr. H. C. Stubbings, headmaster of the Sedgley Council School, for much valuable assistance in the preparation of this paper.

of the long wall which divides the garden from the playground. There is no cart-road. Manure, pea-sticks, &c., are shot over the end wall. A three-foot path, on which the gate opens, cuts the garden into two unequal portions—that to the left extending about 40 yards, that to the right about 60 yards. The former is cultivated by the scholars, the latter by the continuation students, so that the two conveniently come to be known as the Day and the Evening Garden.

Opinions are sharply divided as to whether school gardening should be taught on the (1) general plot system, or on the (2) single plot system. Each has its advocates, and there is much to be said on both sides. Here we have both systems, the day garden on the general plot plan, the evening garden on the single plot plan. This is perhaps an ideal arrangement, for it is advisable that the beginner be under the constant supervision of the teacher, whereas the older pupil, who has probably had some training already, is more capable of being left to himself. Two cardinal objections to the general garden are: (1) that it does not admit clear comparison between the work of one pupil and another, and (2) that it provides a loophole for the less alert learner to miss important operations. The first objection is not vital, as, under any conditions, the beginner is sure to blunder, and, though there is no gauge for the visitor, the master will have the best possible idea of the pupil's total gardening powers. The second objection is more serious, and it is obvious that the success of the general garden as an educator rests almost entirely with the master. He is limited to fourteen boys, and he will see that each of them in turn takes a practical share in all parts of the work. The more delicate operations will not be given always to the boy with special aptitude. All will be called together to witness whatever is of importance. In sowing seeds, for instance, two may start from the ends of a drill, and two from the centre, continuing until they meet. The rest will look on.

The general plot usually covers some 400 to 500 square yards, about the average of a cottage garden. Here a thoroughly domestic scheme of crops may be arranged, and this will be of enormous advantage to the pupil, for it will familiarise him with the quantities and cost of seeds and plants for a given space, the value of the produce, and the difference between ordinary and intensive culture. In the day garden above referred to there are three general plots, each some 33 feet by 130 feet. Three parallel herbaceous borders, each 110 feet by 4 feet, several intersecting paths, and a slope at one end for marrows, &c., account for the rest of the space. A tool-shed occupies a corner. Amongst other plants in the herbaceous border are the following, the names taken from the labels in the order in which the plants are growing—the two or three climbers mentioned are, of course, trained to the wall: Coreopsis, Pansy, Polyanthus, Primrose, White Arabis, Carnation, Virginian Creeper, Tulip, London Pride, Alyssum, Geum, Crocus, Wallflower, Gloire de Dijon Rose, Honeysuckle, Peony, Centaurea Macrocephala, Chrysanthemum, Hemerocallis (Day Lily), Campanula, Anemone Japonica, Pyrethrum, Pentstemon, Aquilegia, Iris (German, Spanish, English), Trollius, Linaria, Oriental Poppy, Evening Primrose, Helenium, Helianthus, Michaelmas Daisy, Phlox, Lilium Candidum, Golden Rod, Delphinium, Gladiolus, Doronicum, and Hollyhock.

The lessons in the day garden occupy the last school hour on two afternoons of the week. The following lists, taken from the Staffordshire Education Committee's scheme, show the tools, seeds, &c., necessary for fourteen pupils on 400 to 500 square yards:

Approximate Initial Cost of Tools, Toolhouse, &c.

	£	s.	d.
First digging		10	0
Toolhouse (carriage paid)	3	10	0
Wheel-barrow		19	6
Five spades (No. 1) at 3s. 4d.		16	8
Three large forks at 1s. 6d.		4	6
Four small forks for weeding, at 6d. ...		2	0
Two garden trowels at 11d.		1	10
Three small rakes at 1s. 4d.		4	0
Three Dutch hoes at 1s. 5d.		4	3
Three draw hoes at 1s. 3d.		3	9
Three large dibbers at 4d.		1	0
Six small dibbers at 3d.		1	6
Two water-pots at 3s.		6	0
Three measures at 5d.		1	3
Three garden lines and reels complete at 1s. 9d.		5	3
One billhook		1	11
	7	13	5

Approximate Annual Cost of Manure, Repairs, Seeds, &c.

	£	s.	d.
14 lb. seed potato (3½ lb. each Sharpe's Express, Duke of York, Scottish Triumph, The Factor)		2	0
½ pint each Sherwood and Eureka peas ...			10
½ pint each broad beans (Early Longpod), runner beans (Sutton A1), and ¼ pint dwarf beans			6½
½ oz. each parsnip (Elcombe's Improved), carrot (Scarlet Intermediate), beet (Pragnell's Exhibition), onion (Rousham Park Hero), onion (Trebon), parsley (Extra Curled), cabbage (Ellam's Early), savoy (Drumhead), kale (Asparagus)		1	0
½ oz. each turnip (Early Snowball), mustard (white), cress (plain), radish (French breakfast)			4
⅛ oz. each leek (Musselburgh), lettuce (Paris Green), ditto (All the Year Round), cauliflower (Walcheren), Brussels sprouts (The Wroxton), sage, thyme			7½
¼ oz. broccoli (Purple Sprouting) ...			1
Twenty-five wood labels, 12 in. painted...			6
Twelve packets flower seeds at 1d. ...		1	0
Pea and bean sticks		5	0
Manure		10	0
Painting of toolhouse and barrow, once every two years, at 6s.		3	0
Annual repairs and breakages		2	0
	1	6	11

Instruction is given in the use of tools, cleaning and replacing the same in an orderly manner after

use; in digging and trenching; in planning and arranging the plot; in drilling, sowing, planting, pruning, layering, budding, and grafting; in the causes of success and of failure; in the qualities and constituents of soil and the uses of manures; in diseases, enemies, and pests. Each pupil carries a small pocket note-book, in which, after each visit to the garden, he jots down: (1) the weather; (2) state of the soil—dry, moist, lumpy, sticky, &c.; (3) work done, especially what seed sown, at what depth, distance apart, and space between the rows, and what plants put in or transplanted; (4) appearance of first shoots, with reference back to date of sowing; (5) first flowers; (6) insects and birds which have attracted attention; (7) anything of interest observed. The produce is the property of the pupils, and is distributed amongst them periodically by the teacher. This is one of the most valuable factors in the scheme, not only because a tangible and valuable reward is an encouragement to labour, but still more because by this means new varieties of plants are introduced into villa and cottage gardens, and a stimulus is given to horticulture over a wide area. Seedlings thinned from the school garden are planted far and wide. The superiority of newer and more scientific, over traditional, methods is also brought forcibly to the notice of those stolid conservative cultivators who pursue the same course, year in, year out, for no better reason than that so their fathers did before them.

An expert from the Board of Agriculture visited the above school garden, and his opening of a conversation with one of the classes shows the scope which school gardening affords the observing and reasoning powers of pupils. It ran somewhat thus:

"Hulloa, boys, what are you doing in that trench?"
"Making a sowing of *Brassica*, sir."
"*Brassica!* What's that?"
"Cabbage, sir."
"Very good; so you know *Brassica's* cabbage?"
"Yes, sir."
"What's that coming up over there?"
"Broad beans, sir."
"How deep did you put the seeds?"
"Four or five inches, sir."
"Why don't you sow your cabbage seeds as deeply? You are putting them only half an inch down."
"Please, sir, if we put these little seeds as deep as those big ones they wouldn't come up."
"What did you have in this trench before?"
"Another sowing of cabbage, but it failed."
"Failed!"
"Yes, sir; the seedlings came up and then gradually dwindled away."
"How was that?"
(First boy.) "The crows took them, sir."
"The crows! I never before heard of crows eating cabbage seedlings. Did you see the crows?"
"No, sir; but my uncle often goes out in the early morning with his gun, and he told me that the other morning he saw a great lot of crows on this part of the school garden."
"Ah!" (*And a pause.*)
(Second boy.) "Please, sir, I think the slugs had them."
"Did you see any slugs on the seed-bed?"
"Yes, sir."
"Did you see them eat any of the cabbage?"
"N—o, s—i—r."
(Third boy.) "I think, sir, the crows came after the slugs, and trampled the bed."

And so on. The incident is merely given to show how the most ordinary occurrence may be turned by a skilful teacher to excellent educational account. Perhaps no other school subject is better calculated to set the pupil thinking and to put the teacher on the alert. Consequently, only head teachers, and such others as are qualified as educationists and gardeners, should be entrusted with this important task. The county councils are therefore giving facilities to teachers to take diplomas in horticulture. Bad and good methods are perpetuated, to the bane or blessing of many families for long years to come. The Staffordshire visiting instructor, who examines the boys in such practical operations as the use of tools, sowing of seeds, and transplanting of crops, after a round of visits to seventy centres, reports: "At several centres the boys were not being taught to sow their seeds out of the packet, but were sowing them separately out of a saucer. Sufficient seed is supplied to each class to allow for each boy to practise sowing in a proper way, and the instructor pointed out the necessity of saving time in this respect, which will be an advantage to the boy when he leaves the class. The draw-hoe was seldom used for making seed-drills. In most cases the back of a rake was preferred for doing this work, and in a few the handle of the rake was being used."

In the evening garden there are twenty-four separate plots, twenty of them measuring some 72 feet by 9 feet each, and four are of irregular shape. All the students grow the same crops, and in the same order in the beds, so that a glance along the lines, which are broken only by 18-inch paths, gives the plots the appearance of one continuous garden. Thus, too, they are easily compared. And this, it should be mentioned, is the case with the three general gardens: they are all cultivated alike, and, standing side by side, admit of instant comparison down the length of any line. Rent is met by students' fees, but there is a liberal allowance by the County Council for tools, seeds, manure, &c. The students have access to their plots at all reasonable hours, in addition to lesson hours. Methods of cultivation, and the accruing advantages, are, of course, similar to those in the general garden, except that here may be the beginning of a valuable and instructive hobby and a means of moral restraint and elevation at an age when habits are getting a strong grip of character.

Between the day and evening gardens are two plots, each 72 feet by 18 feet, stocked with fruit trees. Here are hotbeds and frames for the raising of radishes, early carrots, cucumbers, and tomatoes. And here grafting, budding, and other

operations are carried on for the benefit of both gardens.

Compost and manure heaps are hidden under a belt of shady trees in the triangular corner of the evening garden.

Although reference has been made chiefly to school gardens under public education authorities, it is not overlooked that splendid work in this respect is being done in private schools, and among girls as well as boys. No subject of the curriculum can be more fascinating, more calculated to give tone and vigour to the pupils, more stimulative of the reasoning and imaginative faculties, of artistic and æsthetic sentiments. No form of labour gives such an abundant return as horticulture. Man prepares the soil and sows the seed; Nature does the rest. Great as are the strides that school gardening has made, it is as yet only at the beginning. To introduce it into the great towns is one of the chief problems. There its humanising influence is most needed; but there, for obvious reasons, it is most difficult to establish it.

THE POSITION AND TRAINING OF TEACHERS IN GERMAN SCHOOLS.

By Thomas F. A. Smith,
English Lecturer in the University of Erlangen.

I.—Elementary Schools.

"THE future belongs to the best educated nation" is a saying often heard from the lips of Germans, and relying upon the hope found in this fragment of proverbial philosophy, neither as individuals nor as a community do the Germans shirk any trouble, sacrifice, or expense in preparing themselves to "grab" the future.

A national system of education without teachers is naturally somewhat difficult to conceive; hence one of the planks in their platform is: Get teachers, but get the best material possible. In order to realise this principle nothing within reasonable limits is spared to attract suitable men and women, and when the finished article is turned out, he or she bears the stamp of German thoroughness and system—in a word, efficiency!

Those intending to qualify as teachers in elementary schools commence their career at the age of sixteen (minimum), or a little older, by entering the "training school" (Seminar), where they receive two years' education at the cost of the State. For board each "Seminarist" pays 1*s*. per day, about £16 per annum. In practice, however, so many scholarships exist—grants from State, county, and municipal authorities—that very large numbers of the students pay nothing at all. Following upon this two years' training comes a year as "Praktikant" without salary. This serves as a weeding-out stage, and may last two or three years in doubtful cases.

During the succeeding period of three years the "Hilfslehrer" (assistant) must prepare for the final examination. The latter requires a very thorough knowledge of the theory and history of education, and its very newest feature is the "Lieblingsfach," or pet subject. Candidates who wish to do so can name any one subject in which they will offer themselves for special examination and thereby gain extra marks.

The examination consists of two parts: a written and a *viva voce*. First day, a composition in German, four hours; afternoon, three hours' paper on religion. Second day, history of education and psychology, four hours; afternoon, three hours' paper on modern educationists and most recent developments in pedagogy. Third day, working out of specimen lessons, four hours; afternoon, three-hours' paper on elementary-school method and religious instruction. In the *viva voce* examination the candidates are examined for a quarter of an hour in each of the following: religion and methods of teaching it; general school method, including discipline and hygiene; German; a "pet subject" chosen from the following: history, physiography, mathematics, chemistry, physics, botany, or zoology; half-hour's criticism lesson; twenty minutes for music, including organ and violin playing.

State regulations fix the minimum salary for a "Hilfslehrer" at £40 per annum + free dwelling. It usually results in an inclusive salary being offered; *e.g.*, in Erlangen, £65 for men and £60 for women teachers.

After passing the above examination the assistant enters the semi-final stage of his career, in which he bears the designation of "Schulverweser." The fixed minimum salary is £55 + free dwelling. Taking the figures for Erlangen again, as they offer a good average for town and country, the men and women in this class are paid respectively £85 and £72 10*s*. per annum. The "teacher-substitute" stage, as one may render the above German term, lasts generally from two to four years. This is, of course, largely dependent upon the number of vacancies for "Lehrer" (teachers) which arise; but it is very seldom that a man or woman is more than twenty-seven years of age before getting an appointment as teacher, while the average would be perhaps twenty-five. The local authorities choose the candidates to fill vacancies as they occur; two or three names are submitted to the Ministry of Education, which has no choice but to appoint one of the persons proposed.

Before proceeding to the consideration of salaries and pensions it is necessary to have a clear conception of the teacher's position in the educational machine, to which end the following explanatory details may be of service. Except in isolated cases in large cities there is no headmaster or headmistress appointed to each school. The conditions which prevail in Erlangen, a town of 22,000 inhabitants, are as follows. The whole organisation is controlled by the "Schulrat" (educational adviser). He determines which class each individual shall instruct and solves all staffing problems. Virtually he is the headmaster of each and all the schools in the district. Teachers are practically all equal to each other, each being headmaster in

his own class-room. Between the "Schulrat" and the teacher there is, however, the "Schul-inspection," a committee of three clergymen who are appointed and paid to assist in the work of superintendence and inspection. It seems that the teachers often remain in charge of the same class for long periods, which may result in each becoming a sort of specialist, but at the same time does not afford him a great variety of experience.

On the whole, teachers in German elementary schools are much better off than their *confrères* in England. This applies especially to pensions and to the larger number of men who can attain a maximum salary of more than £230 per annum, and for women £150. Two small items deserve mention as illustrating the attitude of the authorities: (1) Salaries are paid monthly and in advance. (2) In case of death the full salary for the current and the succeeding month is paid to the deceased's heirs.

The actual payment of teachers in country districts compares favourably with England's average. Government regulations fix the minimum for men and women respectively at £68 and £55 + a house in each case. It is further stipulated that the house for a "Lehrer" must contain six rooms for habitation, and that for a "Lehrerin" at least three. The man's salary rises to £140, and the woman has a maximum of £100. Joint-appointments are not tolerated. The State takes upon itself the legal responsibility for one part of the teacher's salary, both in town and country. This moiety begins at £7 10*s.* and rises to £60 per annum, but wherever the local authority is unable to find its share, the deficit is made good by the State, so that in no case is the teacher called upon to suffer. Besides the above fixed salaries, upon which pensions are calculated, he is also able to add to his income by certain extraneous duties, which, as is often the case in England, are compulsory. In this way teachers are often called upon to fill the post of organist, £3 to £18 yearly; in every German village there is official correspondence to be done, which generally falls to the lot of the "Lehrer," bringing him anything from £5 to £20 as "Gemeindeschreiber" (village clerk). Furthermore, for every weekly hour in the continuation school he is paid £5 per annum.

German children enter the elementary or Volksschule at the age of six. Better-class children leave at the age of ten to enter one or other of the State secondary schools. Other children must pass through eight classes, or years, in the elementary school. After the seventh year—that is, when the child is thirteen years of age—parents may take the child away from school, in which case, however, the boy or girl must attend the continuation school for one hour weekly until the age of sixteen. Thus the teachers have all some duties to perform in connection with these schools. The above data concerning salaries are only true of villages and towns with fewer than 5,000 inhabitants, and in order to illustrate the conditions in towns I quote three examples. Government grants towards teachers' salaries are the same for town and country, but the amount added to this varies in different places.

		Min. £	Max. £
Erlangen (22,000 inhabitants) ...	Men ...	110 ...	230
	Women	90 ...	170
Nuremberg (320,000 inhabitants)...	Men ...	123 ...	240
	Women	100 ...	190
Munich (500,000 inhabitants) ...	Men ...	141 ...	280
	Women	100 ...	200

Working hours are fixed at twenty-eight per week, which includes two for correcting exercises. If the teacher works overtime then he is remunerated at the rate of £5 per year for each weekly hour extra. Thus a man doing thirty hours' work in the week would add £10 to his annual salary. The continuation-school work is divided out among the teachers, and one may reckon an average of about £30 in addition to the above salaries. Salaries increase by triennial automatic increments of £15 or £20.

It is, however, in the matter of pensions that teachers are so much better looked after than in wealthy England. One drastic comparison will serve to show the gulf separating pensions earned by German and English teachers respectively. A "Hilfslehrer" after one completed year's service (*i.e.*, two years after leaving college) can claim £39 annual pension for the rest of his life in case he should become incapable of performing his professional duties through illness or such like. This is just the amount which the British Government pays to a friend of mine, who was headmaster of a large London suburban school for nearly forty years! Your German "Lehrer" after forty years' service gets his maximum salary as a pension for the rest of his life. In a word, then, the minimum pension for man or woman teacher in Germany is £39, and this increases with every year's service until after forty years' work the maximum salary becomes the retiring allowance.

Such an expensive and generous scheme of pensions cannot, of course, be maintained without contributions on the part of the teachers themselves. The pensions are paid out of State, county, and municipal funds, and to the first and third of these every teacher must pay direct percentages of his salary. The lowest pension guaranteed by the State is £39, and the highest after forty years' service is £113 for men and £76 for women. The contributions towards this are 11*s.* 9*d.* in the first year, rising to £1 14*s.* in the fortieth, while women pay their maximum £1 2*s.* after their thirty-fourth year of service. In her thirty-sixth year of service a woman teacher also qualifies for her maximum pension. The town guarantees a pension to men and women alike of £15 after the first year's service, rising to £55 after forty years' service for men and thirty-six for women. The contributions made by the teachers are as follows:

Men during first year's service £1 1*s.* 0*d.*, rising to £9 10*s.* 0*d.* in 40 years.

Women during first year's service 10*s.* 6*d.*, rising to £5 10*s.* 0*d.* in 40 years.

The contributions to the town include those for the county, which contributes the third portion of

the pension, bringing it up to full salary after forty years' service. Thus the total yearly amounts paid by teachers to this pension scheme are:

For men £1 12s. 9d., rising after 39 years to £11 4s. 0d.
For women £1 2s. 3d., ,, ,, ,, £6 1s. 9d.

No doubt one of the most general and harassing cares which embitter men's lives is the uncertainty which surrounds the future welfare of wife and children in case the husband predecease his wife. This in the case of English teachers must be only too frequently a bitter reflection. In this respect the Teuton is immeasurably better placed, for at whatever age he should die his widow would receive an allowance for the rest of her life. The widow's allowance is fixed at 40 per cent. of the pension legally due to her husband at death, but in addition to this each child receives 20 per cent. until its twenty-first year, and in the case of a girl until she is married.

Returning to the question of headmasters, concerning which it has already been stated that they are only appointed occasionally in large cities. After twenty-five years' service every teacher gets the honorary title of "Hauptlehrer," and when an "Oberlehrer" is appointed his salary is augmented by a special allowance of £60, rising to £120 per annum. This allowance is, however, ignored when calculating his pension, as are all extra payments. School inspectors' salaries range from £240 to £400 per annum, while that of an educational adviser (Schulrat) will be much about the same, except in the case of large cities where this figure is very considerably exceeded.

Most of the figures in this article apply to Bavaria, the second State in the German Empire. In Prussia, conditions are equally good, and in some cases better, but in Mecklenburg and one or two of the smaller States they are not so good. Generally speaking, England has not much to fear in a comparison of her elementary education with that of Germany. The latter has probably an advantage in that the Volksschule only gives instruction in purely elementary subjects, or rather such subjects as are most necessary in everyday life. Thus the higher classes (or standards) are never taught French, botany, algebra, &c. These and kindred subjects are strictly relegated to their proper place, viz., the "Mittelschulen." Religion plays a great *rôle* in all classes of schools, and the children are sorted out according to their faith, and instructed by a man or woman holding the same tenets.

But one thing is especially noteworthy, and that is the entire absence of rewards, prizes, and medals from German schools. Yet the attendance is on the average about 98 per cent. The child does not go to school to get an attendance prize, but because he must. He learns there the elements of that stern discipline, unswerving obedience to law, and self-abnegation which characterise every phase of German national life.

In Bavaria there are 7,800 Volksschulen, staffed by 18,000 teachers; while in a population of nearly seven millions there are just over 1,000,000 attending elementary schools. Of the 7,800 schools only 4,209 are entirely free; in the remainder school money is still paid, which amounts to £44,000 yearly. This system costs the local authorities £1,830,000, the counties £234,000, and the State £650,000 per annum. Certainly this is a very respectable sum to invest in elementary education, but when we realise that Bavaria—like every other German State—pays for a magnificent system of secondary schools, as well as three universities, then it is possible to understand the value which Germans place upon a sound education.

In comparing German teachers' salaries with those paid in England another important item to take into consideration is the greater buying power of money in Germany. The present writer, after nearly eight years' residence, would estimate the difference at about 20 per cent.

PERSONAL PARAGRAPHS.

THE new headmaster of Harrow will be the Rev. Lionel Ford, headmaster of Repton, who was born in September, 1865. As a boy at Repton he distinguished himself in cricket, and passed to a scholarship at King's College, Cambridge. At the university he was an all-round man, and besides taking a first in the classical tripos in 1887 and the first Chancellor's medal in 1888, he was president of the Union, and a golf "Blue." In 1888 he became an assistant-master at Eton, and three years later headmaster of Repton.

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ANOTHER 'Varsity "Blue" becomes a headmaster in the person of Mr. G. H. Keeton. He succeeds the Rev. C. F. Hutton as headmaster of Pocklington School. A boy at Oakham School, he proceeded to Cambridge as a scholar of Emmanuel College, and took a first in the classical tripos in 1900. For the last seven years he has been sixth-form master at Fettes College.

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IT is announced that Miss E. E. M. Creak will retire next Christmas from the headmistressship of the King Edward's High School for Girls, Birmingham. She is a B.A., and was appointed at the opening of the school twenty-seven years ago.

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MISS ADA E. LEVETT, at present an assistant-mistress at Edgbaston High School, has been appointed to be resident tutor in modern history at St. Hilda's Hall, Oxford, a subject in which she took a first class as a scholar of Lady Margaret Hall in 1907. She was a Gilchrist Fellow and studied at the Sorbonne.

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THE REV. R. H. MALDEN, assistant-lecturer of Selwyn College, Cambridge, where he has been on the staff since 1907, has been nominated principal of the Leeds Clergy School, in succession to Dr. J. G. Simpson. He was educated at Eton and (as a scholar) at King's, Cambridge, where

he took first classes in both parts of the classical tripos in 1901 and 1902. Ordained deacon and priest in the diocese of Manchester, he was for three years curate of St. Peter, Swinton.

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MR. HENRY DURHAM, who retired last Christmas, had been a science master at the City of London School for nearly fifty years, and senior of his department since 1868. He was recently honoured with a complimentary dinner by his old pupils, who number many eminent men, during the course of which a signed address was presented to him.

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THE REV. J. T. BELL, formerly headmaster of Christ's Hospital, Hertford, died recently, at the age of sixty-one. He was educated at Christ's Hospital, won a mathematical scholarship at St. Catherine's College, Cambridge, was twelfth wrangler in the mathematical tripos in 1871, and was elected to a fellowship at his college. He held assistant-masterships at Felsted and Malvern, and returned in 1873 to Christ's Hospital as third mathematical master. In 1880, on the resignation of the Rev. J. H. Newnum, he was appointed headmaster of Christ's Hospital, Hertford; and when the Hertford buildings were made over by the new scheme to the girls, he retired on a pension.

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THE interesting career of Canon C. B. Hutchinson, who died aged eighty-one, was largely passed in connection with education. He was educated at King Edward's School, Birmingham, under Prince Lee, and was one of a group which eventually distinguished itself in scholarship. He was a scholar of St. John's, Cambridge, and graduated in 1851. Lightfoot was senior classic, and Hutchinson was bracketed fifth along with Blore and J. D. Williams, of Christ's Hospital. He was elected to a fellowship at St. John's, and in 1855 returned to his old school for three years as composition master. The chief work of his life began in 1858 on his appointment to an assistant-mastership at Rugby, in the year of Dr. Temple's appointment as headmaster. Here he carried on his school friendship with Benson, which lasted through his life. He resigned his mastership in 1884, and settled at Croydon as examining chaplain to Benson, who was then Archbishop. He was made an honorary Canon of Canterbury in 1892.

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THE late Earl of Stamford, who died at the age of sixty, had a considerable experience of teaching before he came into the title. He was born in 1850 at St. John's, Newfoundland, where his father was principal of Queen's College. A boy of Bradfield College, and a scholar of Exeter, Oxford, he maintained his interest in Bradfield throughout his life, being for many years a member of the school council. He took a first in "Mods" (classical) and a second in Lit. Hum., and was fifth-form master at Mill Hill School under Dr. Weymouth from 1876 to 1878, and in the latter year became professor of classics in Codrington College, Barbados. In 1890 he succeeded his uncle as ninth Earl of Stamford. He had wide interests in connection with Church work, the Hospital Sunday Fund, and the Charity Organisation Society.

* * *

HE is a loss to Bradfield, but the Rev. Dr. Gray, warden and headmaster, must be an even greater. "Acting on medical advice," says the *Times*, he "has placed his resignation in the hands of the council of the college, to take effect at the end of the present term." He has been headmaster of Bradfield since 1880, and has thus completed thirty years in his present position. "Onlooker" has had occasion to refer to his work in settling public-school boys in the colonies. Few will doubt that he has had the lion's share in building up the fortunes of Bradfield College.

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MISS H. P. HUDSON has been elected to a fellowship at Newnham College, Cambridge.

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MR. GUNN, who took over the direction of education in the Orange Free State after the South African War, and had a difference with General Hertzog on the question of the use of English in the schools, has received a presentation from 370 English and Dutch teachers in the Orange Free State Colony.

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SIR JAMES WHITEHEAD has offered the governors of Appleby School the sum of £3,000 to found a leaving scholarship.

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THE loss of Mr. Alfred Nutt, the eminent publisher, is a matter for regret to all connected with education.

ONLOOKER.

MACAULAY'S PERIOD OF ENGLISH HISTORY.[1]

LORD MACAULAY purposed to write the history of England from the reign of James II. to the year 1830, but, as is well known, he died before he had reached the death of William III. That fragment still retains its place in our libraries, not only for its literary style, but also for its real value as a contribution to the history of the country. But much has been done since his time in research. The Historical Manuscripts Commission has revealed the archives of families to which statesmen of that time belonged, and other sources of material are now available that were beyond the reach of students in the first half of the nineteenth century. Moreover, the events of the seventeenth century are regarded from a different point of view. We have learned to appreciate at more nearly their true value the

[1] "The History of England, 1660–1702." By R. Lodge. xix+517 pp. (Longmans.) 7s. 6d. net.

ecclesiastical aspects of that age, and our modern historians aim more at presenting the facts as they were in their fullness than at justifying the actions of one party at the expense of others. And thus this volume, the eighth in the series of the "Political History of England" edited by Drs. Hunt and Poole, of Oxford, but almost the last to be published (we are waiting now only for Prof. Pollard's volume on Edward VI., Mary, and Elizabeth), presents the period which Macaulay treated (for he sketched the reign of Charles II. by way of introduction) with all the improvements possible after the lapse of some fifty years.

That period begins with the "Restoration," or, as it may better be described, the completion of the restoration of the old forms of government which had been begun by Oliver Cromwell when the Little Parliament was dissolved in December, 1653. The royal house of Stewart returned to the island thrones, and the three kingdoms fell apart again, for Charles II. and his advisers thought it would be easier to govern them separately than on Cromwell's unionist plan. Episcopacy was restored as the form of church government throughout the two islands, and the Parliaments of England, Scotland, and Ireland regained their old form. It would seem as if the years 1642–60 had passed but as an uneasy dream from which the nations had now at last awaked. But, as has been often pointed out, there was a great difference between the constitution of the country under the early Stewarts and the constitution as it existed under the later sovereigns of that line. Kingship was to be, but alongside of it was also to be Parliament. The interest, therefore, of the reigns of Charles II. and James II., an interest which makes that period so dramatic, is the attempt of the kings to govern the country in accordance with their own desires, and yet not to offend the gentry and the rising commercial classes who were represented in the House of Commons.

The whole period may be described by a phrase usually employed as the name of one incident, a "Popish Plot." Charles II. worked steadily but cautiously towards a restoration of his mother's religion. James II., as is well known, lost his thrones in a mad attempt to force that change on the people, and William III.'s reign was devoted, so far as England was concerned, to maintaining that solution of the problem, which, first conceived as early as 1673, was embodied in the Exclusion Bills of 1679–81, and was practically carried out in 1688–9.

As incidents in that drama may be mentioned, among many other matters, the growth of the Cabinet, a process which began in the year of the "Restoration" and was not completed until the eighteenth century; the Licensing Act of 1662, which was "made at first for only two years, but was regularly renewed before expiry till 1679" (p. 18), and then, after an interval of six years was again in force, until 1693; the initiation of Appropriation Bills, by which the revenue was allocated to certain purposes and henceforward could not be used by the King for his own ends; and the beginning of that system of "influence" (opponents called it "bribery") by which for more than a hundred and fifty years all Kings of England and Great Britain and their Ministers maintained control over the House of Commons.

Dr. Lodge treats the whole period thoroughly, telling the stories of England, Scotland, and Ireland in separate chapters. He discusses the relation of Clarendon to the "code" which was "nicknamed by later historians" after him (p. 87), and thinks (p. 65) that his desire to make the Act of Uniformity more moderate "was in all probability inspired by the imperative need of maintaining the royal favour." Of Archbishop Sharp and his alleged "treachery" to Presbyterianism, he says (p. 30), "The accusation seems scarcely to hit the mark. Sharp was supple rather than strong, the creature rather than the maker of circumstances. . . . He desired power and influence, and he sought to gain them by espousing the stronger side. . . . Once committed to a course he went to extremes . . . and sought to suppress criticism and condemnation by persecution." On pp. 170–1 he gives the "contemporary lampoon" from which the name "chits" was taken for the Ministers of 1680. In telling the story of the Revolution of 1688–9, he points out that Scotland was passive in the matter (p. 318). "If Scotland," he says, "had had to wait for a revolution until it could effect one on its own account, it might have waited long. . . . And yet the Revolution, which Scotland did nothing to bring about, is a more important event in Scottish history than the Great Rebellion which it helped to originate and in which it played so prominent a part." On p. 334 occurs a remark which, to those not quite familiar with Scottish ecclesiastical history, will sound strange. "The Church organisation which had been established for the greater part of the century was suddenly and completely overthrown. In its place was set up a system of ecclesiastical government, not exactly novel nor alien to popular sentiment, but still a system which had only twice been tried in practice, and on each occasion for a very brief period."

There are a few minor misprints in the book, and certain peculiarities of construction here and there which may also be due to the printers. But, if we may make a serious criticism, it is that while the story of the reigns of Charles II. and James II. has much dramatic interest, that of William III.'s reign seems to drop into mere annals, with the exception, perhaps, of the story of the Partition Treaties. This may be due largely to the nature of the events, but from the point of view of our readers, a chapter is wanted which would develop the importance of William of Orange in our national story. We personally regard him as the most strictly constitutional king in English history. Since Parliament came into existence in the thirteenth century, there has been no king quite similar in circumstances to William of Orange. He came to the throne under the terms

of a contract, the Declaration and Act of Rights, and he abode by the terms of that contract. His object in life was war against Louis XIV. of France, and he used his legal powers in England for that purpose. The object of the Parliament was, on the other hand, the limitation of kingly power, and the maintenance of our "Protestant liberties." There was no love on either side, and the constitutional contract was the only nexus between the two powers. How William used his right to "veto" Bills, how he behaved towards the triennial parliaments, how it became more necessary, every year of his reign, to have unanimity in the new institution of a Cabinet, and how impeachment was threatened against unpopular Ministers, would be but parts of such a chapter as we have imagined.

But we must be thankful for what we have received from Dr. Lodge, the history of the latter part of the eighteenth century told out of fullness of knowledge, and an account of the authorities of that period. There are tables to illustrate the English and the Spanish Succession questions, as well as two maps, one of British North America, one of the Low Countries, and there is an index.

IMPERIALISM.[1]

LORD CROMER, as president of the Classical Association, 1909–10, delivered an address, which in a fuller form is presented in this book. It was a happy choice of subject: no one could be found better fitted, few as well, to discourse on imperialism, than the most successful governor of modern times, and himself an enthusiastic student of antiquity. He brings an acute mind, trained in practical life, to bear on the questions of scholarship, and the result is instructive. In the Greeks he sees no idea of imperialism. But Alexander certainly had it; although Lord Cromer is right in saying that he died before he began his constructive work, yet there are clear indications that he would have attempted construction had he lived. And we may fairly believe that he would have succeeded: his organisation was extraordinary even while he was conquering, for his communications with Macedon were quick and sure. With a fire equal to Hannibal, and a brain apparently equal to Napoleon but without Napoleon's callous selfishness and vulgarity, it is hard to say what he would not have done. It must be admitted, however, that his work had less chance of surviving, since he was not supported by any natural bent for organisation in the Greek peoples. Lord Cromer sees Ptolemy I. as the most successful Greek imperialist, chiefly because "he did not attempt too much." This is an instructive comment from one who succeeded to Ptolemy's kingdom, without the crown.

In dealing with England, Lord Cromer leaves out the self-governing colonies: there the problem, he thinks, is solved, except certain questions such as the tariff and national defence. He draws a comparison between Britain and Rome, pointing out that both have made their conquests reluctantly, although foreigners do not believe it. In methods they are also alike, especially in the use of foreign auxiliaries for defence; but while Rome exacted tribute, Britain has benefited only indirectly, by trade and the employment of her manhood. In the officials, Britain has been wonderfully fortunate; although there was corruption in the early stages, it soon ceased. The Romans, however, were more successful in assimilating the nations under their sway; but they did so by losing their own nationality, in the East at any rate. Something like this is said of the Russians, but there is little truth in it really. The modern problem is far harder, in that religion now enters into it; the West cannot do more than to tolerate the religions of the East. Only once had Rome to confront this problem, in the case of the Jews; and there she failed. In humanitarianism and benevolence British rule has a very honourable tale to tell. Lastly, the Englishman has tried unconsciously to combine two contradictory principles: good government, which implies his own supremacy, and self-government, which is inconsistent with it. Here lies the great problem of the future; but Lord Cromer adds a word of warning. We must see clearly and act courageously, as the Romans did; at present, to hand over India, for example, to Indians for government, would mean the extinction of civilisation there. If the Englishman continues to act by common sense, all will be well; but there is a real danger that sentiment may take its place, and, if it does, that is the end both of India and of England.

It will be seen that Lord Cromer's address is not an academic study: it is a political document of importance. We hope most devoutly that its advice may be noted by those well-meaning but often ill-informed persons, who have the destinies of England from time to time in their charge.

POPULAR SCIENCE AT ITS BEST.[1]

THERE are perhaps half a dozen men of science who can write upon scientific subjects with fullness of knowledge and with literary power. Sir Ray Lankester is one of these; and the present volume, containing a collection of papers contributed by him to the *Daily Telegraph* during the years 1908–9, may be taken as a standard of scientific exegetics which may be emulated but not easily excelled.

Most of the papers deal with natural history subjects—using that term in a wide sense, so as to include protozoology, physiology, and anthropology—but two or three belong to the realms of chemistry and astronomy; and in these branches of natural philosophy the distinguished author is not so comfortable in his easy-chair as he is when expounding methods and results

[1] "Ancient and Modern Imperialism." By the Earl of Cromer. 144 pp. (Murray.) 2s. 6d. net.

[1] "Science from an Easy Chair." By Sir Ray Lankester, K.C.B. xiii+423 pp. (Methuen.) 6s.

obtained in biological sciences. For instance, in the essay on the stars he gives the distance of the sun determined by "light minutes" as 89,000,000 miles. As light takes on the average practically 500 seconds to travel from the sun to the earth, and its velocity is 186,000 miles a second, the distance determined by this method is obviously 186,000 × 500, or 93,000,000 miles, which differs but little from the truth. It is stated that by the use of the photographic plate "some thousands of millions of stars" can certainly be recorded. This is not the case. There is a limit to the number of stars which can be photographed by the best means at the disposal of astronomers, and the limit is about 100 millions. Also, the movement of the solar system toward a point in space near the star Vega has not been determined by spectroscopic observations of that star specifically, but by the consideration of the proper motions and radial velocities of stars in general. The velocity of translation toward the apex of the sun's way thus determined is about 11 miles a second, and not 19 miles a second, which is approximately the velocity of the earth in its orbit around the sun. Finally, Halley was not "the first to discover the law of movement of a comet." It was Newton who found that the motions of comets could be explained by the law of gravitation; and as the result of using Newton's methods to investigate the motions of comets of which sufficient observations were available, Halley was able to predict the periodic character of the comet bearing his name.

Sir Ray Lankester is, in fact, more at home on the earth than in the heavens, and needs a little guidance when he traverses celestial regions. Apart from this, his work is admirable both in style and substance. It is a delight to read, and puts the reader in the living stream of scientific work and thought. We are glad that the essays have been rescued from the ephemeral columns of a newspaper, and we know of no collection which reflects the many facets of recent biological science so brilliantly. If interest in nature cannot be assured by such a work as this, the fault must not be placed upon science but upon the inability of the reader to respond to the stimulation of scientific knowledge.

A SYLLABUS OF THE SCIENCE OF HOME AFFAIRS.

One of the most interesting of the present-day developments of the secondary education of girls is the attempt to modify the curricula in chemistry and physics so as to co-ordinate them with the teaching of subjects such as cookery, laundry-work, and hygiene. During the last few years attempts have been made in this direction, with encouraging results, in a number of girls' secondary schools. It is felt, however, by many teachers that such modified curricula will not, for obvious reasons, be adopted generally until the various authorities conducting examinations for girls of a "Matriculation" or "School-leaving" standard include the modified science course as one of the optional subjects in their schemes of examinations. In considering this matter recently, the executive committee of the Association of Teachers of Domestic Science felt that the first step was to secure, if possible, a general agreement respecting the broad outlines of the syllabus as a whole. A subcommittee was appointed, co-opting outside representatives of hygiene and science teaching, to draft an outline syllabus which should include those portions of elementary physics, chemistry, physiology, and hygiene necessary for the proper understanding of the scientific principles underlying home management. The recommendations of the subcommittee were adopted by the executive committee and the council of the association as a basis of discussion.

It is hoped to secure the approval and co-operation of the Headmistresses' Association and the Assistant-mistresses' Association, upon whom the success of the movement depends.

We print below the suggested syllabus.

Suggestions for a Syllabus for the Teaching of the "Science of Home Affairs."[1]

This syllabus is intended to cover those portions of general elementary physics, chemistry, and laws of health, a knowledge of which is necessary for the intelligent interpretation of simple everyday phenomena and processes connected with home life.

Candidates should be required to give evidence by their answers during examination that they have seen and have themselves carried out experiments illustrative of the principal subjects included in the syllabus. Where possible, the general scientific principles discussed in the course should be illustrated by examples drawn from changes observed or materials used in everyday life.

A. Physics.

Metric System: Measurement of length, area, volume, mass, density, pressure of atmosphere; the barometer.

Heat. Temperature: The measurement of temperature, thermometers; effect of change of temperature on (*a*) volume; (*b*) state—(1) boiling point, (2) melting point. Latent heat. Specific heat.

The Transference of Heat: (*a*) Conduction, (*b*) convection, (*c*) radiation.

B. Chemistry.

Chemical Action: Examples of chemical changes as distinguished from physical or mechanical changes.

(1) *Air.* Composition of air, the chief chemical and physical properties of oxygen and nitrogen; impurities in the air.

(2) *Water.* Chemical composition and physical properties of water; its chief constituents. Solution, solubility, distillation, natural waters, hardness of water.

(3) *Common Acids,* as hydrochloric acid, sulphuric acid, nitric acid, and their principal derivatives.

(4) *Ammonia* and its principal salts.

(5) *Carbon.* Forms of carbon, oxides of carbon, carbonates, chalk, lime. Combustion, flame, Bunsen burner, coal gas.

(6) The outlines of chemical theory, chemical action, atomic theory, symbols and formulæ.

(7) The chief common sugars. Starch, fermentation. Alcohol. The chief common fatty acids, the principal oils and fats. Soaps.

C. Laws of Health.

1. Physiology.

(*a*) Respiration, difference between inspired and expired air.

(*b*) Circulation.

[1] From the annual report for 1909 of the Association of Teachers of Domestic Science.

(*c*) Digestion. Function of food.

2. HYGIENE.

Air: Ventilation.

Water: Storage, contamination, purification.

Food: Relative value under various conditions; *e.g.*, milk, eggs. Micro-organisms affecting the composition of food-stuffs. Sterilisation and preservation of foods, meats.

Rest and exercise.

Cleanliness: Clothing.

Sanitation.

CONFERENCE OF HEADMISTRESSES.

THE thirty-sixth annual conference of the Association of Headmistresses was held on June 10th and 11th at the Godolphin School, Salisbury, Miss Sara A. Burstall, of the Manchester High School, presiding.

After the passing of a resolution recording profound grief for the loss sustained by the Empire through the death of King Edward VII., and expressing heartfelt sympathy with the Queen-Mother and the Royal Family and dutiful loyalty to King George V., the president delivered her address.

She urged that to meet the needs and emergencies of the new order of life which has resulted from the scientific discoveries and inventions of the last century it may be said that a new type of human being ought to be developed, and it is certain that modern conditions require a higher type of efficiency. The currents of new thought and feeling have profoundly affected the place of education in the modern State. Teachers to-day have to combat the danger to character of the weakening of parental control and discipline—caused, perhaps, by the proud self-consciousness and independence of youth—the lack of responsibility in careless and easy-going persons, the fact that parents are doubtful of their own authority, of their knowledge and fitness. More dangerous is the attack on the family as an institution. Side by side with this weakening of family life there is an increased sense of the importance of the new generation, which makes it necessary that the State should concern itself with the bringing up of children who otherwise might become unfit citizens. At last, even in England, the majority of the people are beginning to believe in education and to allow the State to control and finance it. The authority of the State reinforces the weakened influence of the home and seeks to provide for the new generation a better and wiser training for the new demands of a new age than the average parent will, or can, give. Headmistresses do not stand *in loco parentis*; the authority they exercise is reinforced by the authority of the State. The position of the present-day headmistress is therefore much stronger than was the case in the days of the founders of the association in 1874, who would have rejoiced to see what an advance has been made. Miss Burstall does not for one moment believe that the nation is degenerate, but its efficiency is threatened by an excessive and extravagant love of pleasure, a slackness and softness of moral fibre, a contented and self-satisfied refusal to encounter pain and toil. This is another of the evils for which the schools are not responsible, and which they will continue to resist.

Among the numerous matters of educational interest discussed during the meetings, the following may be mentioned.

Miss F. Gadesden, in moving the adoption of the report of the examinations subcommittee, emphasised the need for: (*a*) the lessening of the strain of preparing for scholarship examinations and the simplification of the examination syllabuses; (*b*) the use of school records in lieu of examination in certain subjects; (*c*) the classification of scholarships as honorary or paying.

Miss Douglas, chairman of the curricula subcommittee, stated that the report about to be published on public secondary schools for girls had been prepared at the suggestion of Mrs. Woodhouse (president 1907 to 1909) during the last nineteen months, and was the fruit of many meetings of the curricula subcommittee and of the labours of many members of the association. At an early stage in the work of preparing it, the executive committee endorsed the proposal of the curricula subcommittee that it should take the form in which it is presented. Miss Douglas read the paper which will form the concluding section of the report.

Miss Walker spoke on "How Best to Prepare Girls during the last Part of their School Life for their Duties towards the Community and the State." She showed how training at school in habits of accuracy, industry and honesty in work, prepared girls to do thoroughly whatever they attempted in after-life.

The president proposed, and it was carried unanimously: That this conference empowers the executive committee, through its officers, to proceed to publish a report on curricula on the lines indicated at this meeting, it being understood that the responsibility for particular details in any section rests with the authors of that section.

The following resolutions were also adopted:

That this conference observes with much satisfaction the development in modern education of variant types, alike as regards the particular aims pursued, the details of the methods used and the schemes of study followed in different schools, or as alternative courses in the same school.

It is of opinion that the educational end in view can be approached, and (considering the variety in mental type and probable life-career of the children to be educated) should be made approachable, by ways that differ in certain particulars, but all tend to the attainment of the main educational end.

That this conference greatly regrets the long delay in taking steps for the formation of a teachers' registration council and register, and, in consideration of the resolutions passed practically unanimously by the Special Registration Conference summoned last November by the Federal Council of Secondary School Associations, and attended by representatives of elementary, secondary, and technical associations of teachers, it resolves that the Board of Education be approached with a view to the issue of an Order in Council for the establishment of a teachers' registration council upon the lines indicated by the above conference on registration.

That this conference desires to bring before the University Examination Boards the great importance of co-opting in their administrative and examination work acting teachers who are engaged in school work and are in direct touch with school needs.

That this conference desires to urge on the Examinations Board of London University the importance of creating, to follow the "leaving certificate" examination in use in the fifth forms, a school examination of a higher standard, not lower, than that of the intermediate examination, the passing of which in the proper subjects would exempt from that examination within the university.

History of Germany. By J. Sime. xv+320 pp. (Macmillan.) 3*s.* 6*d.*—This is a reprint of a book written thirty-five years ago under the auspices of Prof. Freeman, and revised by Mr. (now Prof.) Ward. It has a chapter on recent events by Mr. R. P. Mahaffy.

SCIENCE AS SUBJECT-MATTER AND AS METHOD.[1]

ALL who are much interested in securing for the sciences the place that belongs to them in education feel a certain amount of disappointment at the results hitherto attained. The glowing predictions made respecting them have been somewhat chilled by the event. Of course, this relative shortcoming is due in part to the unwillingness of the custodians of educational traditions and ideals to give scientific studies a fair show. Yet in view of the relatively equal opportunity accorded to science to-day compared with its status two generations ago, this cause alone does not explain the unsatisfactory outcome. Considering the opportunities, students have not flocked to the study of science in the numbers predicted, nor has science modified the spirit and purport of all education in a degree commensurate with the claims made for it. The causes for this result are many and complex. One influential cause, the remedy for which most lies with scientific men themselves, is that science has been taught too much as an accumulation of ready-made material with which students are to be made familiar, not enough as a method of thinking, an attitude of mind, after the pattern of which mental habits are to be transformed.

Among the adherents of a literary education who have contended against the claims of science, Matthew Arnold has, I think, been most discreetly reasonable. He freely admitted the need of men knowing something, knowing a good deal, about the natural conditions of their own lives. Since, so to say, men have to breathe air, it is advisable that they should know something of the constitution of air and of the mechanism of the lungs. Moreover, since the sciences have been developed by human beings, an important part of humanistic culture, of knowing the best that men have said and thought, consists in becoming acquainted with the contributions of the great historic leaders of science.

These concessions made, Matthew Arnold insisted that the important thing, the indispensable thing in education, is to become acquainted with human life itself, its art, its literature, its politics, the fluctuations of its career. Such knowledge, he contended, touches more closely our offices and responsibilities as human beings, since these, after all, are to human beings and not to physical things. Such knowledge, moreover, lays hold of the emotions and the imagination and modifies character, while knowledge about things remains an inert possession of speculative intelligence.

Those who believe, nevertheless, that the sciences have a part to play in education equal—at the least—to that of literature and language, have perhaps something to learn from this contention. If we regard science and literary culture as just so much subject-matter, is not Arnold's contention essentially just? Conceived from this point of view, knowledge of human affairs couched in personal terms seems more important and more intimately appealing than knowledge of physical things conveyed in impersonal terms. One might well object to Arnold that he ignored the place of natural forces and conditions *in* human life, and thereby created an impossible dualism. But it would not be easy to deny that knowledge of Thermopylæ knits itself more readily into the body of emotional images that stir men to action than does the formula for the acceleration of a flying arrow; or that Burns's poem on the daisy enters more urgently and compellingly into the moving vision of life than does information regarding the morphology of the daisy.

The infinitely extensive character of natural facts and the universal character of the laws formulated about them are sometimes claimed to give science an advantage over literature. But viewed from the point of view of education, this presumed superiority turns out a defect; that is to say, so long as we confine ourselves to the point of view of subject-matter. Just because the facts of nature are multitudinous, inexhaustible, they begin nowhere and end nowhere in particular, and hence are not, just as facts, the best material for the education of those whose lives are centred in quite local situations and whose careers are irretrievably partial and specific. If we turn from multiplicity of detail to general laws, we find, indeed, that the laws of science are universal, but we also find that for educational purposes their universality means abstractness and remoteness. The conditions, the interests, the ends of conduct are irredeemably concrete and specific. We do not live in a medium of universal principles, but by means of adaptations, through concessions and compromises, struggling as best we may to enlarge the range of a concrete here and now. So far as acquaintance is concerned, it is the individualised and the humanly limited that helps, not the bare universal and the inexhaustibly multifarious.

One of the most serious difficulties that confronts the educator who wants in good faith to do something worth while with the sciences is their number, and the indefinite bulk of the material in each. At times it seems as if the educational availability of science were breaking down because of its own sheer mass. There is at once so much of science and so many sciences that educators oscillate, helpless, between arbitrary selection and teaching a little of everything. If anyone questions this statement, let him consider in elementary education the fortunes of nature-study for the last two decades.

Is there anything on earth, or in the waters under the earth or in the heavens above, that distracted teachers have not resorted to? Visit schools where they have taken nature-study conscientiously. This school moves with zealous bustle from leaves to flowers, from flowers to minerals, from minerals to stars, from stars to the raw materials of industry, thence back to leaves and stones. At another school you find children energetically striving to keep up with what is happily termed the "rolling year." They chart the records of barometer and thermometer; they plot changes and velocities of the winds; they exhaust the possibilities of coloured crayons to denote the ratio of sunshine and cloud in successive days and weeks; they keep records of the changing heights of the sun's shadows; they do sums in amounts of rainfalls and atmospheric humidities—and at the end, the rolling year, like the rolling stone, gathers little moss.

Is it any wonder that after a while teachers yearn for the limitations of the good old-fashioned studies—for English grammar, where the parts of speech may sink as low as seven but never rise above nine; for text-book geography, with its strictly inexpansive number of continents; even for the war campaigns and the lists of rulers in history, since they cannot be stretched beyond a certain point, and for "memory gems" in literature, since a single book will contain the "Poems Every Child should Know"?

There are many who do not believe it amounts to much one way or the other what children do in science in the elementary school. I do not agree, for upon the whole I believe the attitude toward the study of science is, and

[1] From an address delivered by Prof. J. Dewey as chairman of Section L, Education, of the Boston meeting of the American Association for the Advancement of Science, 1910.

should be, fixed during the earlier years of life. But in any case, how far does the situation in the secondary schools differ from that just described? Anyone who has followed the discussions of college faculties for the last twenty-five years concerning entrance requirements in science will be able to testify that the situation has been one of highly unstable equilibrium between the claims of a little of a great many sciences, a good deal (comparatively) of one, a combination of one biological and one exact science, and the arbitrary option of the pupil of one, two, or three out of a list of six or seven specified sciences. The only safe generalisation possible is that, whatever course a given institution pursues, it changes that course at least as often as the human organism proverbially renews its tissues. The movement has probably tended in the direction of reduction, but everyone who has followed the history of pedagogical discussion will admit that every alteration of opinion as to what subjects should be taught has been paralleled by a modification of opinion as to the portions of any subject to be selected and emphasised.

Science teaching has suffered because science has been so frequently presented just as so much ready-made knowledge, so much subject-matter of fact and law, rather than as the effective method of inquiry into any subject-matter.

Science might well take a leaf from the book of the actual, as distinct from the supposititious, pursuit of the classics in the schools. The claim for their worth has professedly rested upon their cultural value; but imaginative insight into human affairs has perhaps been the last thing, save *per accidens*, that the average student has got from his pursuit of the classics. His time has gone of necessity to the mastering of a language, not to appreciation of humanity. To some extent, just because of this enforced simplification (not to say meagreness), the student acquires, if he acquires anything, a certain habitual method. Confused, however, by the tradition that the subject-matter is the efficacious factor, the defender of the sciences has thought that he could make good his case only on analogous grounds, and hence has been misled into resting his claim upon the superior significance of his special subject-matter—even into efforts to increase still further the scope of scientific subject-matter in education. The procedure of Spencer is typical. To urge the prerogative of science, he raised the question what knowledge, what facts, are of most utility for life, and, answering the question by this criterion of the value of subject-matter, decided in favour of the sciences. Having thus identified education with the amassing of information, it is not a matter of surprise that for the rest of his life he taught that comparatively little is to be expected from education in the way of moral training and social reform, since the motives of conduct lie in the affections and the aversions, not in the bare recognition of matters of fact.

Surely if there is any knowledge which is of most worth it is knowledge of the ways by which anything is entitled to be called knowledge instead of being mere opinion or guess-work or dogma.

Such knowledge never can be learned by itself; it is not information, but a mode of intelligent practice, an habitual disposition of mind. Only by taking a hand in the making of knowledge, by transferring guess and opinion into belief authorised by inquiry, does one ever get a knowledge of the method of knowing. Because participation in the making of knowledge has been scant, because reliance on the efficacy of acquaintance with certain kinds of facts has been current, science has not accomplished in education what was predicted for it.

We define science as systematised knowledge, but the definition is wholly ambiguous. Does it mean the body of facts, the subject-matter? Or does it mean the processes by which something fit to be called knowledge is brought into existence, and order introduced into the flux of experience? That science means both these things will doubtless be the reply, and rightly. But in the order both of time and of importance, science as method precedes science as subject-matter. Systematised knowledge is science only because of the care and thoroughness with which it has been sought for, selected and arranged. Only by pressing the courtesy of language beyond what is decent can we term such information as is acquired ready-made, without active experimenting and testing, science.

The force of this assertion is not quite identical with the commonplace of scientific instruction that text-book and lecture are not enough—that the student must have laboratory exercises. A student may acquire laboratory methods as so much isolated and final stuff, just as he may so acquire material from a text-book. One's mental attitude is not necessarily changed just because he engages in certain physical manipulations and handles certain tools and materials. Many a student has acquired dexterity and skill in laboratory methods without its ever occurring to him that they have anything to do with constructing beliefs that are alone worthy of the title of knowledge. To do certain things, to learn certain modes of procedure, are to him just a part of the subject-matter to be acquired; they belong, say, to chemistry, just as do the symbols H_2SO_4 or the atomic theory. They are part of the arcana in process of revelation to him. In order to proceed in the mystery one has, of course, to master its ritual; and how easily the laboratory becomes liturgical! In short, it is a problem, and a difficult problem, to conduct matters so that the technical methods employed in a subject shall become conscious instrumentalities of realising the meaning of knowledge—what is required in the way of thinking and of search for evidence before anything passes from the realm of opinion, guess-work and dogma into that of knowledge. Yet, unless this perception accrues, we can hardly claim that an individual has been instructed in science. This problem of turning laboratory technique to intellectual account is even more pressing than that of utilisation of information derived from books. Almost every teacher has had drummed into him the inadequacy of mere book instruction, but the conscience of most is quite at peace if only pupils are put through some laboratory exercises. Is not this the path of experiment and induction by which science develops?

I hope it will not be supposed that, in dwelling upon the relative defect and backwardness of science teaching, I deny its absolute achievements and improvements, if I go on to point out to what a comparatively slight extent has the teaching of science succeeded in protecting the so-called educated public against recrudescences of all sorts of corporate superstitions and silliness. Nay, one can go even farther and say that science teaching not only has not protected men and women who have been to school from the revival of all kinds of occultism, but to some extent has paved the way for this revival. Has not science revealed many wonders? If radio-activity is a proved fact, why is not telepathy highly probable? Shall we, as a literary idealist recently pathetically inquired, admit that mere brute matter has such capacities and deny them to mind? When all allowance is made for the unscrupulous willingness of newspapers and magazines to publish any marvel of so-called scientific discovery that may give a momentary thrill of sensation to any jaded reader, there is still, I think, a large residuum of published matter to be accounted for only on the ground of densely honest ignorance. So many things have been vouched for by

science; so many things that one would have thought absurd have been substantiated, why not one more, and why not *this* one more? Communication of science as subject-matter has so far outrun in education the construction of a scientific habit of mind that to some extent the natural common sense of mankind has been interfered with to its detriment.

Something of the current flippancy of belief and quasi-scepticism must also be charged to the state of science teaching. The man of even ordinary culture is aware of the rapid changes of subject-matter, and taught so that he believes subject-matter, not method, constitutes science; he remarks to himself that if this is science, then science is in constant change, and there is no certainty anywhere. If the emphasis had been put upon method of attack and mastery, from this change he would have learned the lesson of curiosity, flexibility, and patient search; as it is, the result too often a *blasé* satiety.

I do not mean that our schools should be expected to send forth their students equipped as judges of truth and falsity in specialised scientific matters. But that the great majority of those who leave school should have some idea of the kind of evidence required to substantiate given types of belief does not seem unreasonable. Nor is it absurd to expect that they should go forth with a lively interest in the ways in which knowledge is improved and a marked distaste for all conclusions reached in disharmony with the methods of scientific inquiry.

The future of our civilisation depends upon the widening spread and deepening hold of the scientific habit of mind, and the problem of problems in our education is therefore to discover how to mature and make effective this scientific habit. Mankind, so far, has been ruled by things and by words, not by thought, for until the last few moments of history humanity has not been in possession of the conditions of secure and effective thinking. Without ignoring in the least the consolation that has come to men from their literary education, it is not too much to say that only the gradual replacing of a literary by a scientific education can assure to man the progressive amelioration of his lot. Unless we master things we shall continue to be mastered by them; the magic that words cast upon things may indeed disguise our subjection or render us less dissatisfied with it, but after all science, not words, casts the only compelling spell upon things.

Scientific method is not just a method which it has been found profitable to pursue in this or that abstruse subject for purely technical reasons. It represents the only method of thinking that has proved fruitful in any subject—that is what we mean when we call it scientific. It is not a peculiar development of thinking for highly specialised ends; it *is* thinking so far as thought has become conscious of its proper ends and of the equipment indispensable for success in their pursuit.

The modern warship seems symbolic of the present position of science in life and education. The warship could not exist were it not for science: mathematics, mechanics, chemistry, electricity, supply the technique of its construction and management. But the aims, the ideals in the service of which this marvellous technique is displayed are survivals of a pre-scientific age, that is, of barbarism. Science has, as yet, had next to nothing to do with forming the social and moral ideals for the sake of which she is used. Even where science has received its most attentive recognition, it has remained a servant of ends imposed from alien traditions. If ever we are to be governed by intelligence, not by things and by words, science must have something to say about *what* we do, and not merely about *how* we may do it most easily and economically. If this consummation is achieved, the transformation must occur through education, by bringing home to men's habitual inclination and attitude the significance of genuine knowledge and the full import of the conditions requisite for its attainment. Actively to participate in the making of knowledge is the highest prerogative of man, and the only warrant of his freedom. When our schools truly become laboratories of knowledge-making, not mills fitted out with information-hoppers, there will no longer be need to discuss the place of science in education.

GEOGRAPHIES UP-TO-DATE.

(1) *The Teaching of Geography.* By L. W. Lyde. 119 pp. (Blackie.) **1s.**

(2) *Notes of Lessons on Geography.* Vol. ii. *Scotland, Ireland, Europe.* By Lewis Marsh. 217 pp.; maps. (Pitman.) 3*s.* 6*d.*

(3) *Manual of Physical Geography.* By F. V. Emerson. xvii+291 pp.; diagrams. (Macmillan.) 6*s.*

(4) *Key to Practical Exercises in Geography.* By B. C. Wallis. 84 pp.; diagrams. (Macmillan.) 3*s.* 6*d.*

(5) *Little Folk in Many Lands.* By Hugh Lawrence. 128 pp.; illustrations. (Blackie.) 1*s.*

(6) *Songs of Home and Other Lands—Poems for the Geography Lesson.* 96 pp. (Pitman.) Paper, 5*d.*; cloth, 6*d.*

(7) *The Scholar's Book of Travels.* Part I., *The British Isles*; Part II., *Europe*; Part III., *Other Lands*; Part IV., *The British Empire.* Each about 200 pp.; illustrations and maps. (Philip.) 1*s.* 3*d.* each.

(8) *Philips' Model Geography—Outlines of Geography; The British Isles.* Each 96 pp.; illustrations, maps. (Philip.) 6*d.* each.

(9) *A Systematic Geography of Europe.* By G. W. Webb. 96 pp.; sketch-maps. (Methuen.) 1*s.*

(10) *The Ambleside Geography Books.* Book V., *Asia, Africa, America and Australia.* By Charlotte M. Mason. vii+348 pp.; maps. (Kegan Paul.) 2*s.* 6*d.*

(11) *Cambridge County Geographies. Cambridgeshire,* by T. McK. Hughes and Mary C. Hughes; *Cheshire,* by T. A. Coward; *Gloucestershire,* by Herbert A. Evans. x or xii+155–271 pp.; maps, diagrams, and illustrations. (Cambridge University Press.) 1*s.* 6*d.* each.

(12) *Black's School Geography—Geographical Pictures.* Series XI., *Lakes.* Two packets, six pictures each. (Black.) 6*d.* each packet.

(13) *Geography of New Zealand.* Picture Series A, *Glaciers and their Work.* Sixteen pictures. (Education Department, N.Z.)

ONE important fact the writers of school geographies nowadays recognise—the necessity of up-to-dateness. It is not so long ago that a geography was considered efficient if its matter was within, say, five and twenty years of the date of publication, and a "new" book was merely an old one revised in one or two obvious essentials. All this is changed now. In the list of new works given above all were published at the end of 1909 or the beginning of 1910, and, with one exception, (10), are as unimpeachable on the question of up-to-dateness as books on geography can hope to be.

The list opens with as chatty and delightful an introduction to the teaching of geography (1) as Prof. Lyde has ever written. He is always interesting and full of life—two qualities essential to the good teacher of any-

thing, geography especially, and this little book fairly breathes both. Three points he emphasises: (i) the importance of the teacher's personality; (ii) the necessity of taking physical geography as the base of all geographical teaching; and (iii) the advisability of striking the "human note" in any and all treatments of the subject. He has excellent advice to offer on such moot points as: What is the best type of syllabus to draw up? Is a specialist needed to teach geography? Where is the emphasis to be laid? Which is better, blackboard or lantern? What is most suitable for the different ages, or standards, or grades? What is the best book? It all comes back to his first point—the teacher. One man's meat may be another man's poison. Go and listen to any well-known teachers, who will allow you to listen, and then draw up *your own* syllabus. Make your method educative, from cause to consequence or from consequence to cause, and you make it scientific; *use* your large *physical* wall map constantly, and, above all and beyond all, be human. To the too numerous over-conscientious women he says, "Don't try to teach too much!" To the too few young men who are enthusiastic, "Don't think that you can reach your goal without much toil and perseverance!" And to anyone who is tempted to deduce principles from an insufficient basis of collected facts, he proffers the gentle reminder that "That is precisely the vice of the scandalmonger!" The book is little more than 100 pages from cover to cover, and the type is wide and large; it should be in the hands of all teachers of geography. It will broaden their outlook, even if they disagree with some of the conclusions, for it is the work of a broad-minded man who practises what he preaches, and has had, moreover, plenty of practice.

Mr. Marsh's book (2) is also written for teachers—of course, on very different lines. His notes are for actual lessons, and are set out in three columns—heads, essential facts, teaching hints. The volume naturally follows on his first book, which dealt with physical geography in general and England and Wales in particular. Both are evidently intended for very elementary teachers, and much space, we think, is wasted in giving the most obvious of answers to the easiest of questions. There are, however, plenty of good hints. There are but few mistakes (amongst which, by the way, is the stereotyped one that Milan Cathedral is built of *Carrara* marble), and there are five effective, though rather small, physical maps. Had the book been halved in quantity, it would have doubled in quality.

A good work on physical geography is always acceptable. Though the facts be old, there are always new ways of presenting them and new examples of applying them. Dr. Emerson's "Physical Geography" (3) is "new" to a degree. His method is a maze of questions—exercises rather—and his application is entirely American. He himself is instructor in geology in the University of Missouri, and, let it be said to his credit at once, he has repressed his geology to a degree remarkable in geologists who write geographies. For those who work entirely by question and exercise, this book is a mine of wealth, but for British school geographers the exclusion of all but American examples will not stand as a recommendation. In any case, the teacher will soon cry out for a "key," such as Mr. Wallis gives us (4) to his own "Exercises." These always supply a want, especially for the busy teacher who has other subjects to tackle in addition to geography.

Two interesting books—with not much geography in them—are nos. 5 and 6. The "Little Folk" (5) is a Reader, somewhat gorgeously illustrated, and is adapted for children of about the age of seven. The pictures certainly catch the eye; the frontispiece, "Paris Children Out with their Nurse" (with a suspicion of the military in attendance!), gives a clue to the type. The text may stimulate the oral capacities of the teacher, and, if so, will do good, for the whole world is laid under contribution. This is the case, too, with the "Poetry" book (6), which—notwithstanding the preface—is suitable only for children of a much larger growth. Here again the imagination both of teacher and of taught should be stimulated, for the selection of these word pictures—from a literary point of view—is not to be questioned. Whether they will be "equally as helpful as ordinary pictures in making the geography lesson real" to the "children" (*sic*) is another question, the answer to which we leave to those who care to try the experiment.

No experiment is needed with the next type of book. The Herbertsons' well-known "Descriptive Geographies from Original Sources" have probably inspired the compiler of "The Scholar's Book of Travels" (7). Literary extracts from the best authors who have dealt with this and kindred subjects are always acceptable, and should be accessible to all geography classes. In this case, as the authors quoted include such names as Kingsley and Wordsworth, Darwin and Miller, Dickens and Ruskin, Defoe and Smollett, Lords Lytton and Dufferin, Livingstone and Mungo Park, there is nothing but praise for the compilation. But surely there was no necessity for the compiler—or compilers—to go out of the way in the preface to gird at the oral method of teaching. The pupil does *not* forget the facts taught in this way if they have been rightly taught—*i.e.*, not simply told. And so far from the oral method failing to train a pupil to discover facts for himself, as the compiler appears to think—why, the very reverse is the case *if*, again, the teaching has been on the right oral lines.

So far, the books commented upon have been rather of exceptional types in the world of school geography. The next three—nos. 8, 9, and 10—are examples of ordinary school books on the subject. Of them it is sufficient to say that the "Model Geographies" (8) are the first two of a useful and *cheap* series which is suitable, under a good teacher, for junior examinations; that the "Systematic Geography" (9) is not without blemishes, though it is undeniably strong on the interrelation of physical geography and man's affairs; and that the "Ambleside" book (10) is not up-to-date in many places. The last-named, though advertised as "a new edition revised and brought up to date" by two masters of Berkhamsted School, is sadly out of joint. Certainly it does refer to the discovery of the North Pole in 1909, but at the same time it practically confines its description of Canadian geography to a speech of the Marquis of Lorne's in 1883. It emphasises *coffee* plantations in Ceylon, with never a hint at either tea or rubber. It speaks of the *new* Niger Company in West Africa, oblivious of all that has happened since 1900. It asserts that the Chinese Labour question is still to be decided in the Transvaal, and that Mexico declared itself independent of Spain at the beginning of the present century. Its Indian spelling is antique; one of its maps inserts the "Kong" mountains of West Africa; elsewhere the Rhodesian railway has "recently" just reached the Victoria Falls. Such a book, if it is to be used at all, requires very wary handling!

The "County Geographies" (11) have been often reviewed in these pages. They make capital additions to the school library. The three in our list include "Cambridgeshire," which may be said to give its name to the series, and is treated, accordingly, at greater length than any of the others. There are now fifteen of the counties issued, all of them—except Westmorland—in the southern half of the country. Each book is arranged on

one model, and there is, accordingly, a certain amount of overlapping, which is perhaps unavoidable. The chapters dealing with history, antiquities, and architecture are only indirectly related to geography, but are none the less interesting and worthy of inclusion. The illustrations, always good, seem to improve in the later books, some of those of old Chester and of the fenny parts of Cambridgeshire attracting especial attention.

That pictures are now becoming more and more recognised as aids to geographical instruction the last two items of our list are evidence. Black's "Lakes" (12) and the New Zealand "Glaciers" (13) are, though on the small side, excellent examples of good types. The photo of a crevasse on the great Tasman glacier—no. 12 in the New Zealand series—or of the Caldera, a volcanic basin lake in the Eifel—no. 2 of the "Lakes" pictures—would make an oral or any other description as clear as the sun at noontide. With such desk pictures as these, and such wall pictures as those of Mr. L'Estrange (Philip), a geographical class-room would, at any rate, satisfy Prof. Lyde, who prefers them even to lantern-slides.

GEOMETRY FOR UPPER FORMS.

A Course of Plane Geometry for Advanced Students. Part II. By C. V. Durell. xiii+357 pp. (Macmillan.) 7*s.* 6*d.* net.

Elementary Projective Geometry. By A. G. Pickford. xii+256 pp. (Cambridge University Press.) 4*s.*

IN developing the properties of conics by projective methods, it is difficult to introduce the focal properties at an early stage without appealing to imaginary elements. The most obvious projective properties do not involve measurement except in the form of cross-ratio, while focal properties are nearly all of a metrical character. There is thus obviously room for great diversity of treatment, and this is illustrated by the books before us, the leading difference between the two being that while Mr. Durell makes free use of the methods of analysis in conjunction with those of pure geometry, Mr. Pickford depends entirely upon the latter.

Mr. Durell's work begins with a chapter upon analytical ideas in plane geometry, including Poncelet's principle of continuity, imaginary elements, homographic transformation, and the line at infinity. The difficulties inherent in a purely geometrical treatment are thus evaded, and although this might be regarded as a fault in a methodical exposition of the subject, still, keeping in view the class of students for whom the work is designed, this way of proceeding possesses obvious advantages. Orthogonal projection, with application to practical solid geometry, is next considered, followed by a chapter on the fundamental principles of conical projection. The conic is defined as the projection of a circle, and the properties of poles and polars, tangents and diameters, are deduced. The next chapter introduces the foci by means of the circular points at infinity, and in the following section celebrated properties associated with the names of Pascal, Bucinchon, Newton and others are discussed. The rest of the book deals with reciprocation, homographic ranges, and involution. The book can be used with profit only by readers possessing a fair knowledge of analytic methods, and although comprehensive, a number of theorems frequently required in applications, such as those relating to normals and curvature, are either absent or to be sought amongst the examples. Still, the work will be found most stimulating and useful. The historical notes add greatly to the interest; the general arrangement is admirable, and there is a valuable collection of examples.

Mr. Pickford bases his treatment upon cross-ratio, the conic being defined as the locus of the intersection of corresponding rays of projective pencils. That the curve so defined is a section of a cone is proved in one of the concluding paragraphs of the book. An alternative definition by means of the focus and direction is shown to be equivalent to the homographic definition, but the proof of the converse theorem has likewise to be relegated to a later chapter. The first three chapters develop the fundamental properties of cross-ratio, involution, and projective ranges and pencils. In the next the application to the circle is considered, and in the two following the principal projective properties of conics. There is a useful chapter on the construction of conics satisfying various conditions. The chief metrical properties are next considered, and the book concludes with chapters on reciprocation and homology.

The proofs of the theorems are clear and precise, the diagrams are excellent, and the examples, although not numerous, are carefully selected. The book is very suitable for students of scholarship standard and in junior classes at the university.

HISTORY AND CURRENT EVENTS.

WE are writing this month's notes in Dalarna (*i.e.*, the Dales), a province of Sweden. It has been described as a country of "sticks and stones," and certainly it seems to consist of fir trees, birches, and boulders. Each "dale" has its river, which often widens into lakes of peat-brown water. There is apparently little pasturage, and less arable land, but the population consists of peasant proprietors, who prefer to remain peasants, whatever their wealth. They are, in the sense of the old English word, churls or carls, and thus arises the Latinised word by which the province is known outside Sweden, Dalecarlia. We cannot, of course, dwell here on their history as a whole, but our readers may remember that it was by the help of the "Dalesmen" that Gustav Vasa vindicated the independence of his country from Danish overlordship.

SWEDEN is a kingdom the glory of which lies now in the distant past. In the early Middle Ages it contributed its share to the "wandering of the nations," and Swedes are traditionally held to have taken part in the early Europeanising of Russia. Its modern history began with the Reformation, when Gustav Vasa led a successful Home Rule movement in the name of Lutheranism; and we all know at least the name of Gustav Adolf, whose brilliant but brief career is still celebrated in Protestant Germany. Owing partly to Voltaire and Johnson, Charles XII. too is famous. But it was in his time that Sweden lost her trans-Baltic possessions, so that since the beginning of the eighteenth century she has been, with respect to Europe, almost as purely insular as Great Britain. She has no colonies, and it is only because of the universal war-scare of our own time that she troubles to arm. Her people would prefer to maintain the principle of arbitration on which they based their treaty with Denmark some few years ago.

THE late Dr. S. R. Gardiner is for our generation the authority *par excellence* on the Stuart period, and those who have read his volumes, with Prof. Masson's great life of Milton, will not need for ordinary purposes to go further. Unfortunately, Dr. Gardiner died before he had completed his task, and it has fallen to Prof. Firth, of

Oxford, to bring his story down to the death of Oliver Cromwell. A perusal of the two volumes thus given to us sets us thinking what would have happened if Oliver had lived a year longer. Would he have met another Parliament with the title of King? It seems probable. If not, would the Protectorate have succeeded in remaining solvent? The probabilities were against it. If, therefore, to satisfy his own conservatism and that of the English people at large and to avoid bankruptcy, Oliver had assumed the Crown, would the Restoration have taken place? and, if not, what would have been the ecclesiastical and political history of these islands ever since?

OUR Scottish friends, we suppose, will have no objection on patriotic grounds to "George V." But for those of us who are troubled with a desire for historical accuracy, the result of King Edward's death will therefore be the loss of our temporary allies. We cannot, of course, hope to get rid of the "Four Georges." The shade of Thackeray bars the way. But, even if we are willing to allow that the "first gentleman of Europe" was a fourth George of Great Britain instead of being the second George of Great Britain-and-Ireland, we make our protest, and there leave the matter, against our new King being the fifth George, or, for that matter, anything but the second King of the State known since 1901 as the Kingdom of Great Britain-and-Ireland-and-the-Dominions-beyond-the-Seas. "King of England" he certainly is not, any more than his namesake forebears.

ITEMS OF INTEREST

GENERAL.

ON May 28th at the Regent Street Polytechnic, London, Mr. Blair, education officer to the London County Council, gave an address on "The Newer Education" to the members of the Federated Associations of London Non-Primary Teachers. Mr. Blair said that the adverse criticisms sometimes passed on the results of modern elementary education arise from ignorance of the progress that has really been made in this direction during the last fifty years. There is now hardly an illiterate person in the country, and, moreover, the facts that crime has decreased, that sanitary conditions have improved, that the death-rate has fallen, and that the funds of savings banks and provident societies show a steady increase, must be all attributed indirectly to the work done in elementary schools. An important part of the recent work of the London County Council has been the institution of its scheme of scholarships for children fit to pass from the elementary to the secondary schools. The full development of this scheme is yet to come, for there is a distinct need that the child, leaving the secondary school at the age of sixteen and not wishing to take up elementary-school teaching, should have some course of definite technical training. So far as wage-earning capacity is concerned, boys and girls leaving secondary schools at this age are in no better position than children leaving the elementary schools at the age of fourteen. After reading certain unsatisfactory examiners' reports on work in some secondary schools, Mr. Blair stated that there is still a tendency for this work to be too academic in nature, and that secondary-school teachers must strive to correlate their teaching with the facts of life, and remember that upon them devolves a large part of the responsibility for training the child for its future duties as a citizen of the Empire. Some statesmen consider that before long we may be called upon to meet a serious national emergency, and the way in which we meet this emergency will depend on the work of the teachers both in the elementary and in the secondary schools. A discussion, in which several members took part, followed the address. Mr. Blair, in replying to a vote of thanks, stated that his recent visit to Germany had shown him that Germany and England were working on different lines, but that English initiative is far better than German organisation.

THE summer general meeting of the Association of Assistant-mistresses was held at Cardiff on June 4th. There was a good attendance of members, and about 200 visitors were present. The proceedings opened with a short business meeting for members only, when the work of the committee in furtherance of a compulsory pension scheme for teachers in public secondary schools was briefly outlined by Miss Laurie. Miss Andrews reported the steps taken to promote registration of teachers, and added that the necessity for some action in regard to the formation of a Registration Council was being urged upon the Board of Education. Miss Sheavyn gave an address on "Careers for Girls"; she dealt with the less well-known professions for women which should be preceded by a course of character-forming discipline at a university. After detailing the special university training required by women who wished to become dentists, architects, accountants, analytical chemists, factory inspectors, pharmaceutical dispensers, or house and estate agents, she went on to show the means by which the qualified woman could find an opening for the exercise of her profession. Apart from these careers there is a steady demand for women capable of undertaking medical and remedial gymnastics, or secretarial work in connection with philanthropic societies, for trained lady cooks, nurses, rent collectors, health visitors, school visitors and relieving officers, for teachers of domestic economy and the science of home-making. Public opinion is being educated, she urged, and there is no doubt but that time will show that English-women are possessed of the same commercial and business ability as their French sisters. Miss M. G. Jones spoke on the "Teaching of Civics," and said that civics should be included in every school curriculum; it cannot be satisfactorily taught as a separate subject. All that is covered in civics should be covered by history. It was exacting too much of the scholar to expect him to understand the subject apart from its explanatory setting.

PROF. RIPPMANN proposes to deliver in the autumn a short course of lectures for modern language teachers. There will be five lectures on phonetics, in which the sounds of English will be made the basis, French and German sounds being compared and contrasted; and five lectures dealing with methods of modern language teaching. It is intended that the lectures shall be of direct use to teachers in their daily work, and there will be opportunities for the discussion of difficulties. The lectures will be given at Queen's College, Harley Street, W. All communications about these lectures should be addressed to Prof. Rippmann, 45, Ladbroke Grove, London, W.

THE Selborne Society, of which the late Lord Tennyson was, and Lord Avebury now is, president, has recently been developing its work and increasing its activities. During last year it acquired new offices at 42, Bloomsbury Square, in order to form a home for its library and to provide reading and committee rooms. The objects of the society are to promote the study of natural history; to preserve from needless destruction such wild animals and plants as are harmless, beautiful or rare; to discourage the wearing and use for ornament of (*a*) the skins and furs of such animals as are in danger of being exter-

minated, and (*b*) the skins and plumage of such birds as are not domesticated; to protect places and objects of natural beauty or antiquarian interest from ill-treatment or destruction; to afford facilities for combined effort in promoting any of the above or kindred objects. Full particulars of the society may be obtained from Mr. Wilfred Mark Webb, honorary secretary.

THE Lord Meath Empire Day Challenge Cup inter-all-secondary schools of the Empire, with the five-guinea personal prize offered by the League of the Empire, has been won by George B. Holloran, La Martiniere College, Calcutta, India. The Challenge Cup inter-all-primary schools of the Empire, with the three-guinea personal prize offered by the League of the Empire, has been won by Florence E. Endean, Kentish Town C. E. School, Islip Street, London. The judges of the essays were Mr. H. W. Eve (representative of the College of Preceptors) and Prof. Ernest A. Gardner, of University College, London. The subjects of the essays were as follows: *Secondary Schools:* "The improvement of communication between the different parts of the British Empire; its political and social effect." *Primary Schools:* "The influence of the different climates of the Empire upon domestic and social life."

WE have received from the Singer Sewing Machine Co., Ltd., a good set of pictures of English cathedrals which teachers would find of great assistance to illustrate their lessons in history and geography. We understand that the Singer Sewing Machine Co., Ltd., is distributing sets of the pictures gratuitously to teachers on application, and we would advise our readers not to lose the opportunity of procuring these excellent photographic reproductions.

AT present the New Zealand University is an examining body pure and simple. There are four teaching institutions, Auckland University College, Victoria College (in Wellington), Canterbury College (in Christchurch), and the University of Otago (in Dunedin). The papers for the degree examinations in all faculties except those in medicine and the law subjects immediately affecting local conditions are set and examined by residents of the United Kingdom. Among the examiners' names appear those of Profs. J. W. Hales, R. Y. Tyrrell, J. S. Reid, E. J. Routh, E. A. Sonnenschein, and many others equally well known. In a recent speech the chairman of the Canterbury College Board of Governors strongly advocated the separation of the four colleges into four separate universities. This is certainly what will take place in time to come. But in a colony the population of which is only about one million, it would seem too soon yet to make such a move. This separation will almost certainly entail the substitution of colonial for home examiners. Indeed, this step has its strong supporters even now. But if the change is made the prestige of the New Zealand degree will assuredly be lowered.

A GOOD deal of dissatisfaction exists with regard to the prescription and distribution of subjects required for the B.A. degree in the New Zealand University. It is felt by many that six subjects is too many for the ordinary pass degree. A year or so ago the Senate framed a new statute which enables a candidate to take five subjects instead of six; but any student taking advantage of this statute must repeat one of his five subjects, taking a more advanced examination in it. This is a move in the right direction. There seems also to be a growing feeling in favour of increasing the difficulty of the examinations for all degrees. In spite of the declaration of the Charter of the University that "the degrees conferred by the University of New Zealand shall be recognised as academic distinctions and rewards of merit, and be entitled to rank, precedence, and consideration in our United Kingdom and in our colonies and possessions throughout the world as fully as if the said degrees had been granted by any university of our said United Kingdom," it is but natural that colonial degrees do not carry the same weight as those conferred by one of the universities of the homeland. The only cure seems to be a raising of the standard.

PRESIDENT BUTLER in his last report to the trustees of the Columbia University, in the City of New York, after offering a warning about the mechanical element in education and reproving "those now busily instructing the public, who seem to believe that it would be valuable to know the relative kilowatt power of a course in Latin prose composition and one in modern history," deals with the character of the ideal university teacher. There is, he says, really only one fundamental problem in higher education, and that is to find the teacher. The university needs teachers, sympathetic, patient, unselfishly devoted, to enter into the life and the hopes of those younger students who have but just crossed the line which separates college from secondary school, and not to put off the timid inquirer and seeker after their friendship with impatient word or gesture or with the blunt assertion that they are interested in something other than the education of young men. It needs also men, whether young, middle-aged, or old, who have that peculiar zeal for knowledge and that special skill in seeking it which carry them out to the frontiers of the already known, drawing after them little groups of earnest students who, like their teachers, are impatient to share the delights of discovery. When a university finds men like these it is on the track of how to provide higher education for both college and university students. Until it finds them no university is much more than a business corporation.

DR. WALLER'S paper on "An Imperial Institute of Science," in the current number of *Science Progress*, will be read with considerable interest by those concerned with educational subjects. In brief, Dr. Waller contends that research and teaching form a necessary complement of one another, and that apart they are unnatural and comparatively ineffective factors. He asks for recognition of this dual principle—no research without some teaching, no teaching without some research—in the organisation of the teaching staff of the University of London, and to give it practical effect he suggests the institution of "minor research fellowships" of £50 from the University chest for teachers "recognised by the University on probation." The students of the University are at present organised on college lines, and a further organisation on faculty lines is required to knit the constituent parts more firmly together. Such a bond of union would be an Imperial Institute of Science and Learning, housed in the present Imperial Institute buildings and consisting of select panels of university research fellows in suitable subjects. Such panels should comprise professors, recognised and probationary teachers, and other distinguished persons selected by the boards of the faculties. The physiological laboratory of the University, of which Dr. Waller is the founder and director, gives a valuable illustration of what may be accomplished by these panels, and Dr. Waller's scheme is one which deserves support from all who are really interested in the welfare of the University.

WE have received from the Friends' Guild of Teachers (whose honorary secretary is Mr. R. C. Burn, Sidcot, Winscombe, Somerset) a copy of a paper written at their request by Mr. F. E. Pollard, of Bootham School, York,

on "Education and International Duty" (1*d.*, by post 1½*d.*). It sets forth, in accordance with the well-known principles of the Society of Friends, commonly called Quakers, the principles and aims which should govern the education of the young in the matter of international relationships. Mr. Pollard first argues that the end of education is a moral one, that "the selfish interests of the young must be caught up into a wider purpose," that the teaching of history must be based on a more careful selection of facts than is usual, and that the "survival of the fittest" does not mean merely material success. He then proceeds to show how in the teaching of literature, of geography, of modern languages, and especially of history, there is room for the application of these principles. European history should be studied as well as purely English history, and non-martial stories take an equal place with military history. The rise and fall of Empires must not be treated more superficially than can be helped, but the causes should be studied as well as the outer events. The causes and consequences of wars are as important as the details of the conflicts, and the growth of arbitration should be emphasised. Similar principles should apply in the teaching of the Bible. In these and similar ways Mr. Pollard thinks we may train the rising generation to a higher ideal of international duty than has prevailed in the past.

VOL. II. of the *Journal of the Municipal School of Technology, Manchester*, contains a record of investigations undertaken during the year 1908 by members of the teaching staff. The contents are evidence that the true spirit of research prevails through all departments of the institution. Although most of the investigations have been published previously in various journals, their reappearance in collected form is justified even if only to demonstrate that the school devotes its energies to the extension of knowledge just as seriously as it does to its function as a teaching centre. The complete work of the school may be estimated, therefore, only if this volume is placed side by side with the annual prospectus. The investigations, which are sixteen in number, cover a wide range of technical science. Electro-technology is represented by papers on fuse-phenomena, electric discharge and the production of nitric acid, electrolytic corrosion, the alternating-current circle diagram, and vector algebra for alternate-current problems. In the technology of cotton there are papers on the mercerisation of cotton, on cellulose, and on the dyeing of ordinary and mercerised cotton. Chemistry is represented by three papers on polymorphism and on organic compounds, engineering by a paper on air-pumps and condensers, and the volume concludes with papers on "small dwellings" and on the testing of yarns. It may be doubted whether there is in this country any provincial college of university standing which could produce a finer record of a year's work in original investigation.

IN *School Science and Mathematics* (vol. x., no. 3) an article is given on the mechanics of flight. It is based upon an informal address by Prof. Carl Runge. The theory of the subject is explained clearly, with mathematical treatment of a simple nature. In the same publication a series of experiments for demonstrating the ionisation of air by various methods are described by Mr. C. W. D. Parsons; and teachers of practical geography will be interested in Mr. Florian Cajori's description of "graphic railroad time-tables."

THE last official report on education in Natal marks the completion of fifty years since the appointment of Dr. Robert J. Mann as first superintendent of education in that colony. A period of thirty years has elapsed since the establishment of the educational system now in operation. Excluding native pupils, during the three decades the growth in the enrolment has been about sevenfold, advancing from 2,501 in 1878 to 16,630 in 1908; and schools have increased in number from 67 to 375. In the same period the total Government expenditure on education—exclusive of buildings—has advanced from £8,815 to £107,965, and the school-fee revenue from £845 to £15,040. Compulsory school attendance is to be introduced at an early date, and its advent is looked forward to keenly by the authorities. The principle is to be applied right through the colony, and an additional sum of £15,000 is to be provided to cover the extra expenditure involved.

THE June issue of the *History Teacher's Magazine*, published by the McKinley Publishing Co., Philadelphia, U.S.A., completes the first volume, and in addition to the usual contents it presents its readers with a full index to the whole of the ten parts of which the volume is made up. The proprietors and publishers are to be congratulated on the success which has crowned their efforts to provide teachers of history with expert guidance in all departments of their work. Although the magazine is intended primarily for American teachers, and consequently is largely taken up with syllabuses of United States history, there is, nevertheless, much in it which is of high value to English teachers. Perhaps what is said respecting English history will not appear very fresh; but the schemes for the teaching of general European history will be exceedingly helpful; for in this department America is far in advance of Great Britain. We wish the *History Teacher's Magazine* continued success when, next September, it initiates its second volume.

THE "Girls' School Year Book (Public Schools)" has been made the official book of reference of the Association of Headmistresses. The new issue for 1910–11 is available, and on examination proves to be even more useful than previous issues. Parents will find Part II. of the volume especially valuable, because of the guidance there provided in the difficult task of choosing a career for their daughters. No schoolmistress can afford to be without a copy of this annual.

MESSRS. HEYNES, MATHEW, LTD., of Cape Town, have sent us a copy of their 1910 illustrated catalogue of scientific apparatus and laboratory chemicals. The list is of particular interest, providing as it does incidental evidence of the growth in recent years of science teaching in South African schools. It is not many years ago since teachers of science in South Africa had to send home to this country for their apparatus, but now it has become worth while for Messrs. Heynes, Mathew, Ltd., to stock the ordinary requirements of school and college laboratories.

SCOTTISH.

A RECENT case in the Court of Session has directed attention once again to the extreme unfairness of the incidence of local taxation. The School Board of South Uist intimated to the Parish Council that it would require the sum of £1,600 in order to carry on educational affairs for the ensuing year. The Parish Council refused to levy a rate to bring in that sum, as it would lead to a breakdown of the whole machinery for collecting assessments in the parish. The members of the Parish Council pointed out that to raise the sum required they would require a school

rate of 11s. 4d. in the £, and this, joined to the other local rates, would mean taxation to the extent of £1 3s. 4d. per £1. They further pleaded that the increase in the amount for educational purposes was occasioned by the action of the Congested Districts Board, which removed families from congested districts where there was a sufficiency of school places to small holdings in South Uist where there were no schools. The Court of Session, while sympathising with the hard case of the South Uist ratepayers, has decreed in favour of the School Board, and has ordained the Parish Council to levy the requisite rate. In law no other decision was possible, but the case reveals a condition of things by no means creditable to the central authority. A Government Department for social reasons brings about a redistribution of the population of a certain area. Instead of bearing the expenses incidental to such a change, it compels them to be borne by the ratepayers among whom the incomers have been dumped. If this is law, then certainly "the law is a hass."

THE spring meeting of the Classical Association was held this year in the University Hall, St. Andrews. Prof. Harrower, in the course of his presidential address, said that it was impossible to make an address from the chair without reference to the Scotch Education Department, the policy of which dominates the whole field of secondary education and has far-reaching effects even upon the universities. In consequence of the uniformity of curriculum insisted on during the first three years of the secondary education course, the study of Greek has almost been banished from their schools. To meet the requirements of divinity and other students, the University of Aberdeen had to institute a junior class in Greek, thus reverting to a policy expressly deprecated by the University Commissioners of 1889. These results were foretold in the association years ago, but the Department refused to accept its representations, and affirmed that Greek would not be one whit prejudiced by the new order of things. It does not tend to strengthen the confidence of the country in the general administration of the Department when it is shown to be so woefully lacking in prescience in this particular case. Prof. Harrower also referred to the threatened extinction of Latin in the training colleges for teachers, and expressed the hope that the Department will allow greater freedom and variety of subjects to individual students. In the sphere of education uniformity means death.

PROF. BURNET, St. Andrews, introduced an interesting discussion on the place of set books in university preliminary examinations. He said that the Classical Association of England has been considering the question, and has declared that all such examinations should consist of two parts, one dealing with translation from prescribed books and the other with unprepared translation. The leaving certificate examinations are based wholly on unseen translation. In his opinion this tends to favour precocity and cleverness at the expense of more solid attainments. The brilliant self-confident pupil with perhaps little knowledge but much courage will always make a much better appearance at such examinations than his abler but more diffident fellows. The subsequent discussion brought out great variety of opinion. The disadvantages of unseen translations were generally recognised, but it was feared that the introduction of set books would lead to the most odious form of cramming. Ultimately it was remitted to the council to bring up a report on the subject.

THE General Medical Council has been considering for some time a proposal to detach the subjects of the first professional examination in medicine, viz., botany, zoology, chemistry, and physics, from the regular medical curriculum, and to relegate them to the preliminary school stage. In this way it is hoped to obtain more time for the purely professional subjects and for practical training, the requirements in which are every year becoming greater. Naturally enough, the Scottish university professors and lecturers in these subjects are strongly opposed to the change, which would rob them of the bulk of their students. They have drawn up and forwarded to the Medical Council a memorial on the subject. The general question does not concern us here, but an emphatic protest must be made against one sentence in the memorial. "Were a parrot-like knowledge of the mere facts and formulæ of science all that is desired, the committing of these to memory might be done at school, but knowledge thus obtained is of little practical and no educational value." The eminent men of science who have signed this document are surely educational Rip van Winkles. To them the schools are still Gradgrind institutions for repeating unmeaning vocables and dry-as-dust formulæ. They apparently know nothing of the advances of the past two decades. They are not aware that the science teaching in schools is almost entirely practical, and that if it has a fault at all it is that it does not pay enough attention to memorising the facts and formulæ of science. It is satisfactory to find that several members of the council took exception to the terms of the memorial, and in particular traversed the statement in regard to the character of school education.

THE annual meeting of the Scottish School Boards' Association was held this year in Perth. Representatives were present from all parts of the country, and about 400 members of School Boards were in attendance. Before the business programme was taken up, Lord Provost MacNab, on behalf of the Corporation of Perth, extended a cordial welcome to the members of the association. The chairman, the Rev. Dr. Smith, in his opening address dealt with the question of imperial *versus* local contributions to the education funds. He showed that while the amount of the former has remained almost stationary for the past few years, the latter is going up by leaps and bounds. He also directed attention to the fact that in the matter of grants Scotland is worse treated than England and Ireland. In the discussion that followed there was much straight speaking, but little clear thinking. The majority of the meeting took the bit in their teeth and refused to listen to the wisely framed motions of their natural leaders. By a huge majority they declared themselves opposed to any reduction in the size of classes, and resolved to do all in their power to defeat the proposal.

COMMEMORATION DAY is essentially an English institution, but lately it has been introduced into Scotland in connection with the universities. Judging by the interest it excites, it has evidently come to stay. The University of Glasgow can claim credit for initiating this alien but altogether commendable custom, and this year special honours were paid by it to the memory of Andrew Melville, principal of the University, and one of Scotland's greatest sons. The Rev. Dr. John Smith, who delivered the oration, paid a notable tribute to the man and his work.

THE summer graduation ceremony at Glasgow University was carried through amid the customary rowdiness and turbulence. The holiday spirit is in the blood of the students, and finds an outlet in shouts and clamour and practical jokes of the crudest type. If one could only be certain that the holiday was earned by a session of hard

and strenuous work much might be forgiven to these children of a larger growth. Principal MacAlister, in delivering his closing address, referred to the satisfactory progress that had been made by the citizens' committee in connection with the founding of a chair of Scottish history and literature, and afterwards detailed a number of gifts which had been made over to the University during the year. The most notable among these were the £20,000 of Mr. John S. Kennedy, of New York, and the £10,000 of the Misses Pollok, of Pollokshields.

IRISH.

THE Department of Agriculture and Technical Instruction has issued its explanatory circular and regulations in connection with the programme of experimental science, drawing, manual instruction, and domestic economy for day secondary schools for the session 1910–11. The circular contains an official calendar for the year, and is accompanied by a useful memorandum with a list of forms of time-tables and registers furnished by the Department. The circular and programme for the coming year contain nothing new. Stress is again laid upon the opinion of the Department that students under twelve years of age are not capable of taking full advantage of instruction in the first-year syllabuses, and attention is also directed to "the fact" that pupils who are capable of profiting by promotion to a higher course should not be permitted to repeat the previous year's course. In addition to the two years' preliminary courses which all students of science must take, the Department provides special courses for the third and fourth years in physics, chemistry, mechanical science, natural science (botany, and physiology and hygiene), domestic economy and drawing, and a special course for the fourth year in geology.

THE Department has also issued the programme of the Killarney School of Housewifery for the session 1910–11, the object of which is to provide a systematic training in cookery, housemaids' and parlourmaids' work, needlework and laundry-work, such as would fit the pupils for domestic service or the care of a home. The school year is from August 16th to June 30th, and the fees are £4 per quarter, plus an entrance fee of £1, covering residence, board, and instruction.

THE National University announces that the second university examination of the old Royal University will in future be abandoned. There will thus be only three examinations under the National University which students must pass to obtain an Arts degree, viz., the matriculation, the first Arts, and the final degree examination.

THE Board of Studies of the National University announces that it has passed a recommendation that, after the year 1911, Irish shall be a compulsory subject for matriculation.

THE intermediate examinations were held this year from June 13th to June 23rd. By a curious oversight, the first two days of the examinations coincided with the Jewish Feast of Weeks, or Pentecost, which disabled the Jews from being examined on those days. The subjects on those two days were important, including German, Latin, and English papers. The Board at first refused to offer any remedy, treating it as a kind of fatality, but at last, under pressure from the Jewish authorities and Mr. Birrell, arrangements were made to provide Jewish candidates with alternative papers in those subjects on a later day.

THE Intermediate Board held a conference with the Joint Committee representing heads of schools on May 28th on two important matters. The first was finance, the funds of the Intermediate Board being this year lower than ever on account of the failure of the whisky duties; it is stated that the intermediate grant to schools, which was £60,000 a year five or six years ago, and then fell to £50,000, will this year not be more than £30,000, a very serious drop in the case of Irish schools, where the annual balance-sheet is always a matter of concern. It is something that the Intermediate Commissioners have at last recognised that their finances are inadequate, and they are apparently anxious that the schools and public shall assist them in impressing this fact upon the Government. The other matter is the provision of a satisfactory basis for awarding exhibitions and prizes. It is quite clear that the system inaugurated ten years ago, which aimed at encouraging specialisation, has not been successful in achieving this object, and it could not do so because it runs counter to the underlying principles of secondary education in Ireland, where in the highest classes there is little specialisation, the tendency of the universities being also more and more in the direction of awarding entrance exhibitions on a general education and not on knowledge of special subjects.

WELSH.

DR. A. E. WILLIAMS, the medical officer to the Flintshire Education Committee, has recently submitted his report for 1909, in which he deals with the cases of 397 children whose physical condition was below the normal. He attributes their lowered vitality to improper feeding, insufficient sleep and food, as well as the putting of children to work during out-of-school hours. In height and weight the rural children beat the urban children, especially in the young-age groups. At the age of three, on admission to school, the height and the weight of rural children were above the standard for the rest of the country. The doctor further stated that parents frequently seek his advice regarding suitable occupations for their children, especially when such children are delicate. It was also reported that it is considered advisable to suggest the employment of district nurses to visit the homes of scholars. With regard to defective vision, spectacles are now provided at a price within the reach of all.

THE Wrexham Intermediate Schools for Boys and Girls are separate, and are of considerable size. At the annual statement of accounts just made, it was reported that there was an adverse balance of £18 19*s.* 5*d.*, and a balance in hand on the girls' school of £2,021. There are 56 boys and 47 girls who hold scholarships or bursaries, and out of the approximate number of 394 pupils in the schools, 149 have their full fees paid for them.

AT the annual extra-collegiate meeting of the Court of the University of Wales, held at Pontypridd, Lord Kenyon was elected as senior deputy Chancellor of the University to succeed Sir Isambard Owen, the Vice-Chancellor of the University of Bristol, who had resigned. Sir Harry Reichel in a fine speech recognised the incomparable services which Sir Isambard Owen has rendered the University both during the preparation of the charter of the University and subsequently in guiding its administrative work.

AT Abergele Intermediate School the headmaster, in his speech at the prize-day gathering, stated that the entrance scholarships competed for by children in the elementary schools are distributed over the district in such a way that the rural children stand an equal chance of success with the town children. He went on to say that the school games are now carried on under the "house" system,

every pupil belonging to some "house" named after a Welsh hero. The result is that there is now no difficulty in inducing every scholar to take part in the games.

The prizes at the Abergele School were distributed by Miss Crossfield, of Colwyn Bay, who, in the course of an interesting speech, said she had just come home from India, Burma, and Ceylon, and during her travels had realised what wonderful vocations are open to men and women who have the pluck to go out into the world, and the scope there is for girls in the Empire if they have a little practical knowledge as well as well-trained minds. A girl who knows how to run a house and do the cooking as well as intellectual work will be welcomed everywhere in the colonies.

It is stated that the total grants earned by the Merioneth schools is £17,023, while the teachers' salaries are £20,500, thus leaving £3,277 to be provided from the rates. The other expenses, as repayments of loans, clerks to managers, attendance officers, books, medical inspection, amount to £10,127. A 3½*d.* rate pays teachers' salaries, while a 9*d.* rate is necessary to meet the other expenses.

The Merthyr Education Authority has decided to take no action in regard to placing the teachers of non-provided schools upon the same scale as teachers in the provided schools pending the decision in the Swansea case in the House of Lords. The cost of making the change would involve an increased expenditure of about £200. At a meeting of the Aberdare Education Committee a motion has been carried to put teachers of all schools, provided and non-provided, on the same scale, provided the same qualifications exist in the case of both classes of school.

Principal Griffiths, of the University College of South Wales, Cardiff, has brought before the Cardiff Education Committee the statement of the difficulties of pupil-teachers in gaining admission to the day-training departments of the University Colleges. He pointed out that three or four years ago that committee decided to grant a one year's exhibition to students entering the day-training department, and this experiment has had satisfactory results. The Board of Education gives the students their King's scholarship in their second academic year. This has been a great success. The Board of Education having recognised this as a principle, it seems to be the only plan for anyone to enter the day-training college and avoid the extraordinary regulations the Board has laid down. Principal Griffiths thinks the Education Committee should continue the experiment, as the county scholarships are only for one year. The Director of Education (Mr. J. J. Jackson) was asked to prepare a report on the matter.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Souvestre, L'Éclusier. Edited by T. H. Bertenshaw. (Longmans.) Teachers' edition, 110 pp., 1*s.*; Pupils' edition, 94 pp., 9*d.*—This is a volume in the Intermediate Series of Longmans' French Texts. Souvestre's story—rather a sombre one—occupies 38 pages of text, clearly printed, though the appearance of the page is rather spoilt by the device of printing certain letters in thick type to indicate that they are pronounced. The notes (17 pages) supply some renderings and a great deal of grammatical information. There are exercises consisting of words, phrases, sentences, and passages for retranslation, somewhat after the fashion of the appendices in Mr. Siepmann's well-known series. The pupils' edition finally contains a vocabulary. The teachers' supplement consists of a key to the exercises, with some additional notes. The work appears to have been conscientiously done, but there are no fresh departures to note in the editorial treatment of the text.

G. de Nerval, La Main enchantée. Edited by A. Barrère. iii+87 pp. (Mills and Boon.) 1*s.*—Nerval's queer story has been edited before; it is rather exciting and may be recommended for cursory reading. The editor supplies a brief biography; "phrases" (mostly sentences) for retranslation—*e.g.*, "I cannot go out in military dress; this art is not what it might become; the candles had not been snuffed; he had made the avowal of his negligence; this shopman puffs up his goods well"; and a vocabulary, which is far from complete.

Mérimée, Deux Contes: La Justice sommaire; Bois d'Ébène. Edited by J. F. Rhoades. 93 pp. (Methuen.) 1*s.*—This volume in Methuen's Simplified French Texts contains the well-known tales "Mateo Falone" and "Tamango" in an abridged and simplified form. They are not cheerful stories; but that they have both been repeatedly edited for schools is evidence of their popularity. Mr. Rhoades has supplied a good vocabulary.

L'Énault, Le Chien du Capitaine. Edited by Margaret de G. Verrall. 144 pp. (Cambridge University Press.) 9*d.*—The authorities of the Pitt Press are continuing their policy of issuing cheaper editions of their French reading books consisting of text and vocabulary only. We regard this as a retrograde step, and would suggest that there should be also cheap editions with the notes, but without the vocabulary, or, better still, with reform exercises, such as Mr. Wilson Green has recently supplied to one of the books in this series.

Textes et Questions, Classes Avancées. By W. M. Poole and E. L. Lassimonne. viii+99 pp. (Murray.) 2*s.* 6*d.*—This is on the same lines as the smaller book recently issued by the same authors, and may reckon on the same warm reception. The texts are here a little more difficult and the questions more advanced, and the arrangement of having text and questions on opposite pages has been given up. There are from twenty to eighty questions on each of the forty passages, which average a little over three-quarters of a page in length. If we venture to make any suggestion to these highly capable exponents of the reform method, it is that they should classify the questions, instead of giving those on subject-matter, those on word-formation, and those on applied grammar all together. They should also be careful to avoid letting their applied grammar questions become regular puzzles. This was a criticism justly made on some of the questions on French grammar set for London Matriculation some years ago—the only fault, by the way, in otherwise excellent papers.

Our contemporary, *Moderna Sprak*, continues bravely on its career. It admirably serves the purpose of aiding Swedish students of modern languages, and is always well-informed and up-to-date. Much of its space is devoted to exercises in translation from Swedish into English, French, and German; and it is also noteworthy on account of its able reviews and its useful bibliographical sections. We sincerely hope that the editors, Mr. C. S. Fearenside, Mr. C. Polack, and Mr. E. A. Meyer, find that their journal is widely sold and studied.

Classics.

Iambica. An English-Greek and Greek-English Vocabulary for Writers of Iambic Verse. By J. Jackson. x+398 pp. (Macmillan.) 7*s.* 6*d.*—This book contains: (i) rules for quantity; (ii) the English-Greek; (iii) the Greek-English. In (i) it is unfortunate that the editor keeps the term "long" for long vowels and for heavy syllables: this is a source of much confusion; and such markings as ἐκλείπειν tend to obscure the meaning of long and short. The terms of Indian prosody, heavy and light, are far preferable for syllables. There is also the usual mistake as to the meaning of *arsis* (p. ix), which properly is the syllable that does not bear the ictus. The vocabularies have been compiled from the tragedians almost wholly. The articles mostly contain words, but a few common phrases and some quotations are also given. Vocabulary (3) gives information as to accidence and syntax. It is certainly a useful book, and supplies a want.

The Plays of Aeschylus. Translated from a revised text by Dr. Walter Headlam. xvi+320 pp. 3*s.* 6*d.* *The Seven against Thebes.* By the same. 32 pp. 1*s.* (Bell.)—We have already reviewed several of these plays in THE SCHOOL WORLD; and we are very glad to receive them all bound together. A new reading of the volume increases our sense of the loss of a fine scholar and literary man. If he had lived, we should certainly have had an admirable edition of the poet. As it is, these translations contain a large body of notes, on text and interpretation, which give the volume a value above that of a translation. The translation itself is admirable: pithy, strong, and dignified, it avoids the mawkish affectations of a "poetical style" so called; it is, indeed, often bold in this respect, but it always hits the mark. No scholar can afford to be without this book.

The Ion of Plato. With Introduction and Notes by St. G. Stock. Not paged. (Clarendon Press.) 2*s.* 6*d.*—The "Ion" is a bright little dialogue, well suited for schoolboys who have read their Homer. Mr. Stock's notes are brief and useful; his introduction adequate. But we wish he had omitted the Analysis of the Argument. We thank him for one sparkle: "A rhapsode was a kind of cross between a clergyman and an actor." Although it is not really true, it tickles the attention.

Thucydides, Book III. Edited by E. C. Marchant. xlii+226 pp. (Macmillan.) 3*s.* 6*d.*—Mr. Marchant prefixes a good historical introduction, with a few pages on the style and diction of the author which are welcome. The notes contain everything that the master can want; we have expressed already our opinion that such books contain too much to be profitable to the boy, and we protest once more against the English running summary. We do not always like the English style of the renderings (*e.g.*, 11², "it is reciprocity of apprehension alone"). We do not believe that chapter xvii. is spurious, without some reason to explain its being there: from the end of Mr. Marchant's preface (p. xli) we had not expected this excision. But most of the notes are good, some specially so when Greek idiom is discussed (*e.g.*, p. 134). We like this best of Mr. Marchant's editions.

English.

Graduated Exercises in English Composition. By H. Bendall. iv+126 pp. (Blackie.) 1*s.* net.—The secretary to the Joint Scholarships Board has written his book to meet the demand of the Board of Education, as set forth in its circular on the teaching of English in schools, for a variety of written exercises to accompany the English teaching. An attempt is here made to graduate these exercises, from those which depend mainly on memory up to easy themes. The age of the pupils is supposed to be from ten to sixteen. The first quarter of the book is taken up with descriptive stories and anecdotes; at first the story is read to or by the pupils for reproduction in a slightly different form; then stories are given in outline, with blanks left for the proper words or expressions; lastly, there are passages for rearrangement of detached sentences by insertion of link words. Some of the blanks seem to us very blank; for instance, a cricket story begins thus: "Capital —, when well —." "You have — it?" "I — think so, — of times." After these descriptive stories we have some good exercises in punctuation—some requiring rearrangement into metre. Then follow pictures to be turned into stories. Later come a dozen pages of reported and direct speech. Recomposition has twenty pages assigned to it—partly passages for paraphrase and partly passages for recasting into more modern style. The themes suggested for original composition—some with guidance, all biographical, and some without—seem to us rather superfluous. The section on diction is concerned with the use of synonyms, antonyms, &c., and includes lists of words in illustration, words for discrimination, the use of rhetorical terms, and some faulty sentences for correction. We are quite sure that Mr. Bendall has correctly interpreted the Board's wishes in the matter of exercises; his book should be useful in many teachers' hands for occasional variety; but we believe that most teachers will find the staple for these exercises in the text which their classes are studying.

A Short History of English Literature. By C. E. Baines. xiii+400 pp. (Edward Arnold.) 3*s.* 6*d.*—Mr. Baines writes primarily for the "general student," a person, we gather from the preface, for whom "the most useful account of the subject is one which works readily in with other branches of his study." We are not sure that we quite understand, but our impression after reading the book is that the "general student" is a kind of Macaulay in that he devours all information; we fervently hope that his digestion is equal to the demands made upon it. But, seriously, who is this "general student" who must know in a review of English literature of four hundred pages octavo that "Henry Vaughan's 'Silex Scintillans' (1650–5) is the expression of a religious emotion inspired by the contemplation of nature"? We seem, however, to gain some clue to the gentleman's identity when we read that "Barham's fertility in amazing rhymes anticipated Browning." It is notoriously easy to jeer at the disproportionate notices assigned to authors in compilations of this kind; but why George Darley should be made to appear of equal, or more than equal, importance with George Herbert is a little difficult to understand. But let us not be misunderstood; the tone of the book is thoroughly amiable, and it contains much matter which it ought to contain—if it was to appear at all. There is just one omission that seems to us rather serious; at any rate it would seem so, we feel sure, if we were a "general student"—there is hardly a line from cover to cover of that English literature of which the book purports to be a history.

Selections for Dictation. By E. H. Crump. 96 pp. (Rivingtons.) 1*s.* 6*d.*—Mr. Crump has especially in view candidates preparing for the Civil Service and the Oxford and Cambridge Locals. In addition to 150 passages for dictation from our leading prose writers, we are given

lists of words commonly misspelt and words of unsettled spellings, as well as two useful little chapters on punctuation marks and on the use of capital letters. The ideas are all sound—but did they require a book to enshrine them?

Science and Technology.

Science in Modern Life. Edited by Prof. J. R. Ainsworth Davis. Vol. v. x+208 pp. (Gresham Publishing Co.) 6s. net.—In this volume, the fifth of the series to which it belongs, Prof. J. Wilson deals with agriculture, Dr. J. Beard with philosophic biology, Prof. Benjamin Moore with physiology and medicine, and Dr. H. S. Harrison with anthropology. The volume is one of the best that has appeared, and it fully justifies the generic title of the work. We should have preferred a more modern treatment of agriculture by Prof. Wilson, but his historical sketch is nevertheless very interesting. The contributions by Dr. Beard and Prof. Moore are admirable in every respect. Such subjects of recent inquiry as Mendelism, biometry, heredity, the cell with its structure and problems, unorganised ferments or enzymes, animal parasites in relation to diseases, radium treatment, antitoxins, and so on, are all described; and we do not hesitate to say that these two sections of the work present, within their limits, as informative statements of philosophic biology, cytology, and the principles of preventive medicine as could be desired. Dr. Harrison's treatment of anthropology is also satisfactory, and teachers of geography will find it a particularly valuable aid to lessons on the human race from the time of its origin to the present day. The illustrations, especially the coloured plates, are good and appropriate. For the purpose of reference or reading by the teacher or the inquiring student we know no scientific work more comprehensive or, in general, better executed than that of which this volume forms a distinctive part.

Educational Handicraft. By T. W. Berry. viii+100 pp. (Blackie.) 1s. 6d. net.—To those educationists who are not fully convinced of the educational value of handicraft in primary schools, this book should be helpful and convincing, whilst those already engaged in such work will find in it much matter of a stimulating nature. Unlike many similar books, no set courses of work are laid down, but the whole subject is reviewed with the object of showing the real value of different materials. It cannot be too often stated that the gap which exists between the kindergarten of the infants' school and the handicraft generally taught to the older children is very detrimental to a full measure of success being obtained. Numerous extracts from the writings of the most noted educational reformers, and a bibliography of books bearing upon the subject, add to the value of the book, and we confidently recommend it to teachers.

A Woodwork Class-book. Beginners' Course. By H. Hey and G. H. Rose. viii+54 pp. (Methuen.) 2s.—As its title suggests, this little book is another addition to the many volumes which contain a detailed course of woodwork for children in the elementary school. Although it illustrates very freely an easily graded course of woodworking exercises suitable for eleven-year-old children, there does not appear to be any novelty or new feature in any of these exercises. From what the authors say in the preface, it would appear that the book is intended, subject to a wise discretion of the teacher, as a class-book to be used by the pupil. If this is so, we should have liked it better had there been more variety of the same exercise or modifications of the same tool exercise given, to suit the varying capacity of the pupils. The illustrations and the text are good, and the observation lessons are interesting and clear.

New Watch-glass Clip. (Griffin.) 3d. or 4½d. each.—From Messrs. Griffin and Son comes a new self-adjusting clip for holding watch-glasses. This ingenious little device compares most favourably with any form of clip at present on the market. It consists of two small rods joined by cleverly attached spring wires. It is strong enough to hold a pair of watch-glasses, keeping the ground edges in contact all round, and yet so elastic are the springs that the most fragile glass can be secured or released without fear of breakage or loss of contents. A small glass is held as securely as a large one. The clip is supplied in two sizes, to take watch-glasses up to 1¾ inches and 2¾ inches in diameter respectively.

To their Catalogue of Collecting Apparatus Messrs. Flatters and Garnett, 32, Dover Street, Manchester, have now added revised *Catalogues of Microscope Slides, Zoological, Botanical and Geological Specimens, Lantern Slides,* and *Microscopes and Accessories.* (3d. each, post free.) The lists are quite up-to-date, and are well worth the attention of teachers of natural science.

Pedagogy.

How to Tell Stories. By S. C. Bryant. 256 pp. (Harrap.) 2s. 6d.—This book has been waited for: and if it is the precursor of some serious work in the art of story-telling it will indeed be useful. We may say at once that it is concerned with little children only: with the more important older children and the still more important adult it has nothing to do. Out of its 256 pages twenty-three are devoted to the subject—but these twenty-three are pure gold, insisting as they do on naturalness, absence of the stagey manner, a quiet voice, and interest in the story. The book may be said to be a protest against the reciter. The remaining chapters are taken up with stories—some of them "cooked," and cooked not always well—and with subjects such as the purpose of story-telling and specific uses of the story; all very interesting, but not very germane to the title. There is a bibliography at the end, not very illuminating: stories rather than books should be named. Modern French and German work is not touched on; no mention is made of illustrations, other than those of the children; and the nuances of the art are merely hinted at. Yet the book is most welcome; it will encourage many a teacher: it is admirably printed and cheap; and the spirit throughout it is the right spirit. "Explanations and moralising," says the author, "are usually sheer clatter." This one quotation ought to set people ordering the book.

Art.

Schools of Painting. By Mary Innes. 295 pp.; illustrated. (Methuen.) 5s. net.—For a present or a prize that will be read with interest and remembered with profit one cannot desire a more suitable book than this brief historical sketch of the schools of painting. What Mrs. Innes calls her "audacious survey of the centuries" embraces the period from the beginnings of Christian art to the middle of the nineteenth century, and constitutes an historical framework wherein is set, in its true perspective, each noteworthy fact and feature connected with the awakening and development of art in Europe. There is no attempt

to give an exhaustive record of the masters or their works; the reader for whom this book is intended would probably find such a list more confusing than helpful; the author has therefore exercised a wise and cultivated discrimination, selecting as her examples such pictures as are most representative of the painter or the period, or which possess such features as have compelled her individual admiration. These are described in an easy, flowing, and eminently readable manner, with such details of the intimate life of the artist as may have had a bearing on the character of his work, interwoven with a running commentary of criticism and elucidation which should imbue the reader with a burning desire to see for himself the masterpieces the beauties of which are revealed with such intimate and enthusiastic appreciation. Among the numerous excellent photogravures are reproductions of many notable pictures in the more inaccessible public and private collections. An obvious slip on p. 150 makes Rubens attain his majority in 1798 instead of 1598.

Story Illustration for Children. By Olive Marks. Forty-three plates. (Charles and Dible.) 2s. net.—This is a book which would destroy one of our most cherished traditions. From time immemorial we have been accustomed to a certain type in the representation of the human figure as seen by children; it varies considerably in detail, as is evidenced so strikingly in the works of Dr. Kerschensteiner, Sully, and other psychologists; but the fundamental forms—the elliptical body, the globular head, the more or less jointless limbs, garnished with innumerable toes and fingers—are always present, drawn with the spontaneity and *naiveté* which is a constant delight in children's drawings. The child draws the figure as it appears to him, and his natural form of expression, as was also that of the other savage, primitive man, is in *outline*. Miss Marks would change all this. She would have her little pupils base their figure on a skeleton of simplified form, with clothing and accessories superimposed. The result, as seen in her book, appears to us, if not exactly gruesome, at least decidedly unpleasant. True, the child may thus learn that the lower arm is not so long as the upper arm, that the hand does not reach the knee, and other details of proportion; but if the price of this knowledge is to be the loss of the child's individuality of expression, and of the consequent charm of the drawing, one is inclined to ask, is it worth while?

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.

Shortcomings in Mathematical Tables.

ALTHOUGH books of four-figure and other mathematical tables are as common now as school geometries were a few years ago, there does not appear to be one which exactly meets my requirements and which I can unhesitatingly recommend for use in classes and examinations.

The feature which is most conspicuous by its absence is a table of complementary logarithms, or logarithms of reciprocals. The only book I know which contains these is Bottomley's "Four-figure Mathematical Tables." But Bottomley's book is too expensive to purchase in large numbers for the use of pupils and examination candidates, and it has the further disadvantage of containing unnecessary repetitions. The provision of separate tables for sines and cosines (to take one example) not only increases the labour of using the tables, but also fails to bring into prominence the dual use of trigonometric tables depending on the properties of complementary angles.

A table of complementary logarithms is constantly required in connection with some of the most frequent arithmetical operations if these are not to be made unnecessarily lengthy and cumbersome. I give the following example:

Ex. Find

$$\frac{0{\cdot}0357 \times 72{\cdot}89}{3{\cdot}216 \times 0{\cdot}5484}.$$

By the ordinary method

$$\begin{aligned} \log 0{\cdot}0357 &= \bar{2}{\cdot}5527 \\ \log 72{\cdot}89 &= 1{\cdot}8626 \\ \hline & \quad 0{\cdot}4153 \\ \log 3{\cdot}216 &= 0{\cdot}5073 \\ \log 0{\cdot}5484 &= \bar{1}{\cdot}7391 \\ \hline & \quad 0{\cdot}2464 \end{aligned}$$

$$\begin{array}{r} 0{\cdot}4153 \\ 0{\cdot}2464 \\ \hline \end{array}$$

$$0{\cdot}1689 = \log 1{\cdot}475.$$

By the use of complementary logarithms

$$\begin{aligned} \log \ & 0{\cdot}0357 = \bar{2}{\cdot}5527 \\ \log \ & 72{\cdot}89 = 1{\cdot}8626 \\ \operatorname{colog} \ & 3{\cdot}216 = \bar{1}{\cdot}4927 \\ \operatorname{colog} \ & 0{\cdot}5484 = 0{\cdot}2609 \\ \hline & 0{\cdot}1689 = \log 1{\cdot}475. \end{aligned}$$

The following are other instances in point:

(*a*) To find, in any triangle, A from the formula

$$\sin A = \frac{a}{b} \sin B,$$

we first have to add together $\log a$ and $L \sin B$, and then we have to subtract $\log b$ from their sum. With a table of complementary logarithms we have only to perform a single addition sum:

$$L \sin A = \log a + \operatorname{colog} b + L \sin B.$$

(*b*) Similarly with two sides and the included angle given, the calculation becomes reduced to the single addition sum

$$L \tan \frac{B-C}{2} = \log (b-c) + \operatorname{colog} (b+c) + L \cot \frac{A}{2}.$$

(*c*) Finally, with three sides given, we may use

$$L \tan \frac{A}{2} - 10 = \tfrac{1}{2}\{\log (s-b) + \log (s-c) + \operatorname{colog} s + \operatorname{colog} (s-a)\},$$

the saving of labour being the same as in the example above worked out.

A table of complementary logarithms is really much more frequently wanted than a table of antilogarithms. At the same time, the latter is not altogether without its use. Logarithms of low numbers are much the most easily taken from tables of antilogarithms, while high numbers are most easily dealt with by a table of logarithms, as in this way large differences are avoided. In one book of tables on the market, this property is utilised by giving only antilogarithm tables for the lower numbers and logarithm tables for the higher ones, a plan which answers well enough after a little practice, but may give trouble to beginners.

In dealing with antilogarithms, the table may be made to read off the *anti-complementary logarithms* by adding

a right-hand column and bottom line containing the arithmetical complements of the numbers in the left-hand column and top line.

In working with trigonometrical ratios, the complementary logarithms are given by the logarithmic secants, cosecants, and cotangents. Many tables, however, omit these.

The question next arises which is better: to have separate tables of logarithmic sines, cosines, tangents, &c., or to have one table extending over several pages and giving all the six functions, as in *Chambers's* seven-figure tables. The former plan seems to meet with most favour nowadays, but I cannot recommend it. It is often necessary to take out several different functions of the same angle, and the plan in question necessitates consulting the same number of different tables instead of finding the required information under one entry. There is, further, the constant risk of making a mistake and using the cosine table when the sine table should be consulted, and so forth.

The copies of Bottomley's book supplied to candidates in examinations for the public service do not contain complementary logarithms. I think the use of these logarithms is valuable from an educational point of view.

Most tables, on the other hand, contain a lot of information which is rarely needed, and if needed can usually be found with less trouble without using them. I refer in particular to such matters as radian measure, reciprocals, squares, cubes, square and cube roots. It is carrying things a little too far when reciprocals are tabulated, but not their logarithms.

The *ideal* book of tables does not yet seem to have appeared, and it is still necessary to follow the principle "If you cannot get what you want, get the cheapest you can and make the best you can of it." If this letter should have the effect of unearthing a collection of tables exactly meeting the above requirements, it will have served a useful purpose.

G. H. Bryan.

Fittings for Science Laboratories.

I have been much interested both in Mr. Cross's paper in the April number of The School World and in the discussion in the June issue. The arrangement of a laboratory is a matter of the highest importance to a science teacher, and a great waste of public money has certainly resulted of late years through the planning of school laboratories by people who do not understand that there is, or ought to be, a great difference between school and college teaching. The high central shelves on the chemistry benches have been condemned, and rightly so. Ease of supervision must be ensured. For this purpose, in the one room which is all I need when teaching one class at a time, I prefer three wide parallel benches, each accommodating eight pupils, arranged with their length perpendicular to the demonstration table and teacher's platform, both of which should be as long as the total width occupied by the benches. Behind these there should be a blackboard of equal length, and to my mind one large fume-closet can most conveniently be placed behind the blackboard. Mr. Cross's suggestion of many fume-closets and many sinks considerably adds to the expense of a laboratory, and I cannot see that for the simultaneous teaching of secondary-school pupils such expenditure is justified. Why should short-period lessons be all that is possible? If the science teacher is also an educator, and he cannot be one truly until he has got rid of the separation between the theoretical and practical lesson, he cannot do with less than a double period, that is, 1½ or 1¾ hours. He must teach many things, mathematics, grammar, composition, hand-work, drawing, deductive and inductive logic, and last, but not least, he seems to me to have a greater opportunity for indirect moral teaching than any teacher in the school.

Carefulness in the use of apparatus will not be promoted by giving each pair of pupils a rubbish-box into which they can surreptitiously put their breakages. Even the breakage of a test-tube in my classes has to be entered up in a breakage book, and anyone making a mess or wasting material is held up to the reprobation of the class. Consideration for others leads to a minimising of noxious fumes, and by taking the work in an order departing from that which has nothing but custom to recommend it, a very considerable knowledge of chemistry can be gained without more than an occasional resort to a fume-closet. Two sinks I have found ample for classes of thirty; these are in a wall-bench, which is only used when the class is unduly large. Aspirator bottles enable condensers to be used.

No apparatus is monopolised by any one class, as Mr. Cross suggests, but, except when experiments have to be carried over from one lesson to the next, everything after use is washed and restored to its place—that place which experience has proved to be most convenient.

Movement about the laboratory is only legitimate for two purposes: for fetching any apparatus or water, &c., not already set out on the benches, and for seeking information from the teacher, who more often than not supplies this in the form of a counter-question. The teacher is the whole time in personal contact with all the members of the class because of the freedom with which they may approach him, and he does not allow any profitless wandering, for every movement is understood to be, and really is, for some distinct object. The pupils are thus learning to act as rational beings, and by the logic of experience are taught the value of forethought and order. Of course, if they are to be crammed in too short a period for an examination arranged by those who know too little of school work, there may be a desire on the part of the teacher for a perfection of equipment which economises every moment; but even a teacher with such a class will admit, if he is candid, that a little more forethought on his own part would enable him to work in Prof. Armstrong's single-sink, single-fume-closet laboratory without much waste of the boys' time.

We want to see science teaching on sound lines provided for every English boy and girl, not only in our secondary, but also in our elementary schools, and it will hinder the realisation of this desire if secondary-school teachers insist that complex and expensive fittings are indispensable for their teaching.

Jessie White.

County School for Girls, Kentish Town, N.W.

A New Form of Weight Dilatometer.

The usual form of the weight dilatometer is somewhat troublesome to dry and fill, and, when the filling is completed, difficulties have still to be overcome in weighing after the apparatus has been cooled to a low temperature, and in preventing loss of liquid by expansion while weighing. If mercury is used there is a risk of its falling on the balance pan.

These disadvantages are obviated in the dilatometer described and illustrated, and the time required for the experiment is considerably reduced.

The neck of the dilatometer is short and straight, and is enclosed in a cylindrical cup sealed to the base of the neck and projecting above the level of the neck.

To dry the bulb, the cup is fitted with a cork and piece of tubing and connected to the water-pump. By warming the bulb and exhausting the moisture is readily removed. The exhausting may be repeated several times with fresh portions of air. In the form shown in Fig. 2 the air is drawn through the bulb by opening the side tube.

FIG. 1.

FIG. 2.

The filling with mercury will now be briefly described for Fig. 1. Mercury is poured into the cup until it is nearly full, and a gentle shake causes it to fall into the bulb. As the cup is emptied, more mercury is added to maintain a slight pressure. The bulb can be filled in a few minutes. A little air still remains in the neck. This is removed by gently warming the bulb until mercury oozes out, and then filling the cup above the neck. The dilatometer is then cooled by immersing the bulb and greater part of the cup in ice-water. By this means *cold* mercury is drawn in, and the *whole* of the dilatometer is immersed and cooled.

After the cooling the dilatometer is removed by holding the cup, and the excess of mercury is at once poured off. After drying, the dilatometer is ready for weighing. The mercury expelled by expansion is collected in the cup without risk of loss.

When the dilatometer is to be placed in hot water or steam the cup is fitted with a cork and a narrow tube bent at right angles; this prevents moisture from entering the cup. After the heating is completed, the expelled mercury is poured out of the cup, and the dilatometer weighed after drying and cooling.

The filling of the second form (Fig. 2) is more rapid, since the air is readily expelled by the side tube, which is completely filled by filling the cup above the level of the side tube. This form is easily washed out and dried by hot air.

The dilatometers described have been in use here with success, and have saved much valuable time.

The dilatometers were made by Messrs. P. Harris and Co., Ltd., Birmingham, from whom they may be obtained.

A. V. C. FENBY.

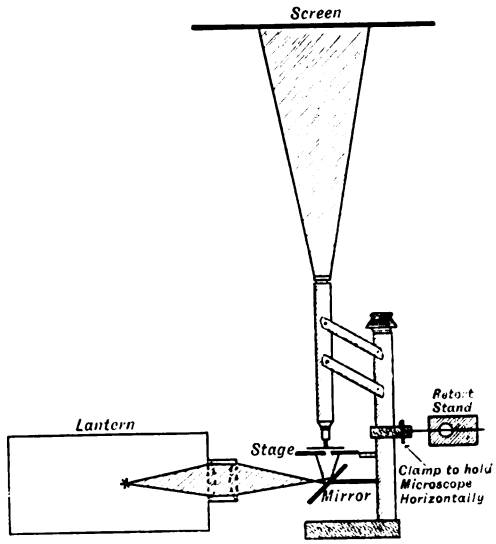
The Wyggeston School, Leicester.

Microscopic Projections.

THE accompanying diagram shows the arrangement for obtaining a microscopic projection easily seen and studied by a fairly large class. The main parts are a lantern of the oxy-hydrogen type and a simple school microscope. The lantern is used with the condenser alone, the other lenses being removed. The microscope is held horizontally by means of a tripod stand and clamp so that the mirror of the microscope is just beyond the focus of the rays coming from the lantern. The light is reflected on to the slide on the stage, and, passing through the microscope, throws a greatly magnified image on to a screen which is placed several feet away from the eye-piece of the microscope. The image is focussed on to the screen by the use of the focussing screw on the microscope.

In schools where the number of microscopes is limited the arrangement will be found of great advantage, as the microscopic structure of any section, &c., can be shown to the whole class at one time, and careful drawings can be made easily.

Where a large number of microscopes are available a typical section, &c., can be shown on the screen, and the main points to be observed pointed out before the pupils are asked to use the microscope for independent observa-



Plan showing arrangement of Lantern and Microscope.

tion, thus overcoming the common difficulty of their being unable to recognise the main points when examining the section. If the screen be made of fine tissue paper the whole image can be traced on it, and in this way a large and accurate representation obtained for future use. This drawing is far in advance of the usual diagram put before the pupil.

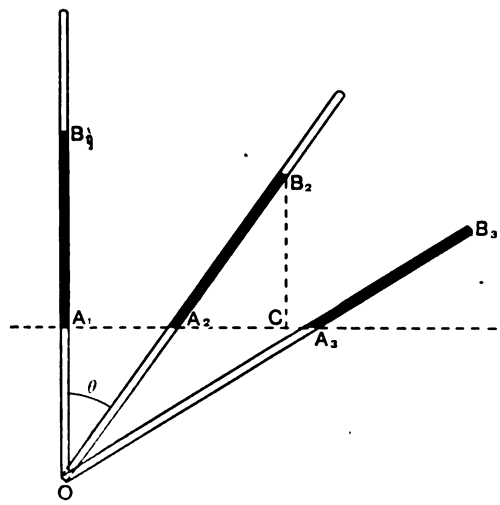
I have used this device for some time, and find that the work of the pupils has become much superior to that obtained without it.

JAS. M. C. WILSON.

Dollar Institution, Dollar, N.B.

A Simple Method of verifying Boyle's Law.

THE following method of verifying Boyle's law is, so far as I know, new. Fill a narrow-bore tube with clean, dry mercury. The mercury should be sucked up with the tube in an almost horizontal position. Place the tube in



a horizontal position and seal off one end 2 inches from the end of the mercury, so as to leave no air enclosed at that end. Turn the tube into the vertical position with the sealed end up, and shake the tube cautiously so as

to leave about 25 inches of mercury in the tube. Clamp the tube in this position, attach a rubber tube and clip to the open end, and suck down the mercury to about 7 inches from the open end. Close the clip and seal the tube about an inch from the end. We have now an air space at one end, a thread of mercury about 25 inches long, and a fairly long vacuum at the other. We can now investigate Boyle's law without interference of atmospheric pressure. Pivot the end O of the air column at a point O of a squared blackboard. Draw a horizontal straight line through A_1. On rotating the tube about O it will be found that A travels along the horizontal straight line. In any position the pressure of the mercury is B_2C and the length of the air column OA_2. The product of those two will be found to be constant.

This is evident, since $B_2C : A_2B_2 = OA_1 : OA_2$. Therefore $B_2C.OA_2 = A_2B_2.OA_1$, and AB is of constant length.

The readings must, of course, be stopped when the mercury reaches the end of the tube. On this account the vacuum should be left as long as possible. The measurements for a p, v graph can be read off direct. If the air enclosed is slightly moist, the curve of A bends slowly upwards.

WILLIAM MILLER.

Dollar Institution, Dollar, N.B.

On further experimenting with thick-walled tubes a difficulty has been experienced in sealing through the mercury, owing to the cold mercury cracking the tube. The procedure with a thick-walled tube should be as follows: First draw out one end of the tube to a capillary tube. Fill with mercury and seal the capillary tube through the mercury. Do not attempt at this stage to round off the point. Now complete the tube. Finally, hold the tube with the vacuum up and round off the end.

W. M.

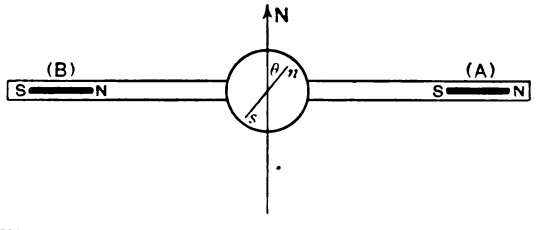
Experiment to show that the Tangent of the Angle of Deflection varies as Deflecting Force.

THE only apparatus needed is a magnetometer and two bar magnets.

Place the magnetometer so that the needle is in the magnetic meridian.

Place a magnet (A) on the scale so that a deflection θ_1 is obtained, and note its position.

Remove (A) and adjust (B) on the other side, so that the deflection is again θ_1, and note the position of (B).



Without moving (B) replace (A), and note θ_2, the new angle of deflection. Take away (B), bring (A) nearer, so the angle of deflection is now θ_2, and then replace (B) in its first position. Observe θ_3. And so on.

Deflecting force	∠ of deflection	Tan of ∠ of deflection
F	θ_1	x_1
2F	θ_2	$x_2 (= 2x_1)$
3F	θ_3	$x_3 (= 3x_1)$
⋮	⋮	

Royal School, Armagh. W. G. MARTIN.

Preparation of Hydrogen.

WHILST attempting to conduct the experiment described in your May number by E. and A. Wechsler, "The Composition of Air," we found that, instead of a contraction occurring, gas was evolved. This, of course, suggested hydrogen, due to water on the surface of the aluminium, and we found that on inverting the tube and filling with water a rapid evolution of this gas took place. In another experiment a flask fitted with cork and delivery tube was nearly filled with hot water, and several strips of aluminium which had been previously treated with mercuric chloride solution were added. At once a rapid evolution of gas commenced, which on testing was found to be pure hydrogen. The gas was evolved in a rapid continuous stream for several hours.

We would suggest this as a convenient, simple, and economical method of preparing hydrogen free from the usual impurities, also obviating the use of acid.

Aluminium amalgam in the presence of water or aqueous ether has been in use as a neutral reducing agent for a considerable time.

A. V. C. FENBY,
J. H. JENNENS.

The Analytical Laboratory, Philip Harris and Co., Ltd., Birmingham.

Laboratory Dusters.

IT will readily be admitted that the use of the "duster" is one of the most important minor details of laboratory technique. Nothing tends to demoralise a pupil's work so much as a dirty, half-sodden duster—bunched and thrust into a drawer.

We have found the following plan to work here. Each pupil is provided with a numbered rectangular towel (cut from suitable material and worked in the sewing-class). A small loop of tape is attached at the intersection of the diagonals and at the middle point of one side. The towels, on being folded into four, are then hung inside the door of the pupil's cupboard, falling neatly into the recess formed by the panel.

The pupil thus always has a clean dry towel for use with his apparatus, while dusters and small brushes are placed in convenient positions for bench-swabbing.

County School, Barmouth. E. R. THOMAS.

Cybulski's Tabulae.

I SHOULD be greatly obliged if you would publish to your readers that "Cybulski's Tabulae" may be obtained either from Messrs. Deighton, Bell and Co., Cambridge, or from Mr. W. Lockwood, 56, Charing Cross Road, London.

We have a very large number of letters inquiring for this information. W. H. D. ROUSE.

Perse School, Cambridge.

The School World.

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THE TEACHING OF ECONOMIC HISTORY IN SECONDARY SCHOOLS.

By E. E. KITCHENER, M.A., L.C.P.
Whitgift Grammar School, Croydon.

THE teaching of history in secondary schools has not yet been so profoundly stirred by the wave of teaching reform as have the subjects of English and geography. Certainly some improvements have taken place; but for the most part it must be confessed that the traditional idea of teaching the subject by the aid of a text-book, with comments thereupon delivered at a moment's notice, still holds sway.

Before discussing our subject in detail, some preliminary observations are essential. In history teaching, as in all other teaching, the teacher should possess a working hypothesis of the meaning of his subject; unless that be done he will be constantly getting into difficulties. What will be his criteria in selecting historical matter if he has no clear conception of the meaning of what he proposes to teach? Surely his very teaching will become based on prejudice, and to that extent will be inaccurate, and may be even totally misleading. No excuse, as for instance, that of the impossibility of historians to agree upon the meaning of history, can now be pleaded. However much they may differ in detail, historians of the present age agree that history deals with the story of human life upon this earth. As Mr. Frederic Harrison puts it: "The true object of history is to show the life of the human race in its fulness, and to follow up the tale of its continuous and difficult evolution."

The pedagogic axiom that a teacher must have a definite aim in view in teaching is as true of history as of any other school subject. What are the aims a teacher of history should have in view? What are the methods he proposes to adopt to achieve those aims? And though the latter problem has more than one definite solution—for there is no one method of teaching anything—the former must rest on certain definite reasons, which the educational world deems adequate and justifiable. Two of the functions of the study of history in school must be noted briefly, as they have a direct bearing upon our subject. One of the aims of education is to prepare the child for its place in the world, or as Milton expresses it in his stately diction: "A complete and generous education . . . fits a man to perform justly, skilfully and magnanimously all the offices, both private and public, of peace and war."

A study of history will help the child to understand the human world of which he forms a part. Such a knowledge will aid him to form wise judgments upon the actions of society of which he is a member. His sympathies will be broadened, his range of view widened, his understanding of the problems of the day enlightened. Especially valuable, nay more essential, is such a study as this in a democratic state, where the destinies of a great Empire are in the control of the people themselves. Another function of history should be to inculcate a love of truth. The teacher should always endeavour to be fair, accurate and just. Too often, the patriotic aspect of the subject is allowed to vitiate its accuracy. A French historian, M. Langlois, pithily summarises the point: "The value of every science consists in its being true, and we ask from history truth and nothing more."

Now it should be quite evident that in deciding what aspects of history to teach in school, the teacher must not omit the economic factors. To do so would imply his disbelief in the aims he has in view or his ignorance of the subject. Far too much attention has hitherto been given to political and military problems in history, and then oftentimes only as affecting one section of the community, and far too little to the growth and development of the people as a whole. Even the Norman Conquest, about which every schoolboy knows something, is as important economically as politically. The economic aspects of the Hundred Years' War, the Reformation, the Spanish Armada, the War of the Spanish Succession, and the Napoleonic struggle are all too frequently ignored, yet their very omission alters the real significance of such events. The great Industrial Revolution of the eighteenth and nineteenth centuries has been even more far-reaching in its results than its contemporary movement, the French Revolution, yet how many pupils have as much as heard the name!

By the term economic movements we mean those influences in the history of a people which deal with the problems of social life on its material side. Such matters as the nature of employment,

the methods of production and distribution of the means of life, modes of transit, are all problems of an economic nature. Lord Morley has significantly stated the importance of this study: "The two best things worth attending to in history are the great movements of the economic forces of a society on the one hand, and on the other, the forms of religious opinions." Especially significant is the economic aspect in the study of modern history, for so important and far-reaching are the economic movements upon the other movements of the time, that some account of them is absolutely essential to a complete and accurate knowledge of the period.

The writer does not assert that economic history as such should be exclusively taught in school; far from it; the economic factor is only one factor in the product, yet it is an important one. All that is urged is that these changes should be given their proper place. Otherwise history teaching is really a misnomer for a study of race development, which omits or relegates to the background the struggles of man with nature, the rise and growth of trade and commerce, the origin and development of capital and labour, and the problems of transit, ignores the essential points of the great problems of life, and may bring upon itself—perhaps deservingly—the schoolboy's censure: "It's beastly rot!"

Now, although it is quite true that there is no one method of teaching history, yet in this case it seems only fair that a criticism of the weaknesses or defects of treating the subject should be succeeded by some definite suggestions pointing out a more excellent way.

For the schoolmaster history is first a pageant and then a philosophy. There are few school subjects which should show so varied a method of procedure as this one. Though the initial and the final stages of treating the subject may be identical—viz., when the so-called lecture method is adopted—the identity is only superficially similar. In this respect history is not unlike geography. In both subjects we start with obtaining vivid impressions, and then proceed to their analysis, completing the process by synthesising our analysis into a complete whole—a vivid impression only now based not merely on the spectacular, but on evidence which can be adequately justified.

In the earliest stage, therefore, that corresponding to the lowest form of a junior school, the method is based on the narrative form of exposition, in which the time relationship is made no more definite than in the time-honoured expression of "once upon a time, long, long ago," with a gradual and judicious introduction of reading matter. Yet even in these early stages economic problems can be mentioned. What can be more interesting than the story of the difficulties of our earliest ancestors in their struggles with nature and with one another—their hunting expeditions, their cloth-making, hut-building, tool-contriving! Yet these are all matters of an economic nature. Nor need the teacher be content with merely story-telling or book-reading. Why not let the children try to model something illustrative of what they have been reading or hearing about—a hut, cooking utensils, implements of agriculture as well as of the chase and of warfare, ornaments, and so forth?

Plasticine as a working material is preferable in the initial stages to any other substance, owing to its great pliability in manipulation, in addition to its convenient property of being usable more than once. With a reasonable amount of care such manual exercises can be carried out in a tidy and cleanly manner. In fact, if the class be given an opportunity of making and doing something of a definite nature, the pictures of those early days which it is learning about will be much more vivid and real. The teacher should constantly endeavour to obtain the historical atmosphere. Young children as a rule readily respond to their master's efforts of make-believe. Of course, he must see to it that these impressions are as accurate as possible, and he must never forget the danger of viewing the past from the atmosphere of the present. Pictures, diagrams, drawing and manual work must be called into requisition to obtain this proper atmosphere, for once that can be got, it can, without strenuous difficulty, be made clearer and fuller by the teacher and by an increasing knowledge of the subject.

In the higher forms of the junior school the same method can be adopted as a working basis, though naturally the children will be allowed, nay, required, to read more widely: by all means retain one text-book as the class-book on the subject, but other books, which could be quite well placed in the form library, should also be consulted. As both pupil and teacher together trace the development of civilisation from its early years onwards, the economic factors should be constantly mentioned. The rise and progress of trade as revealed in the story of Phœnicia, Carthage, and Rome offer splendid opportunities for touching upon such problems as the rise and growth of a monetary system of exchange, the rise and development of slave labour, the great trade routes, maritime and overland. The class can still vivify its impressions by constructing models, though now wood might be used as an additional working material, inasmuch as the boys have better control over their muscles, and are better able to use simple tools safely and intelligently. Models of trading vessels, houses, forts, bridges, aqueducts, tools, pottery, and so on; drawings of coins, modes of dress, as well as free imaginative drawing: such are some of the exercises which may be suggested as helpful to a fuller and more real knowledge of the economic tendencies of the period studied by the children. The magic lantern can now be used to advantage; pictures can be chosen illustrating the architecture, modes of transit, pottery, tools, and so on of the period. The pupils will readily seize their meaning and purpose.

In the senior school the pictorial method gradually gives way to the critical mode of procedure.

The teacher is now no longer satisfied with the canvas of vivid and realistic impressions; he wants to show his class why these particular impressions were given and the results of their blending. In other words, he and his class try to ascertain the reasons and the results of the great movements of history. Not that this method begins suddenly; indeed, during the later stages of treatment in the junior school, the children can be led to observe that history is something more than a cinematographic series of pictures, and that there are reasons for everything that takes place, if we can only find them. Naturally such reasoning will be of an elementary and tentative nature. A simple illustration will suffice to exemplify the point. One reason why war was of common occurrence in the ancient world was that it enabled the controllers of the labour market to obtain new supplies of slaves; other methods of procuring slaves were in practice, but war was oftentimes the cheapest and the readiest means. Yet the junior school history teacher will wisely concentrate his attention upon creating an atmosphere as well as obtaining a good store of "facts," for without these it will be impossible for the later study to proceed on "philosophic" lines.

In the lower forms of the senior school the teacher can reasonably expect the pupils to make a beginning of selecting the facts for themselves; already by referring them to other books on the subject they have had some training in finding facts for their various exercises. It is at this stage that the so-called source method of history teaching comes in helpful. By directing the attention of the pupils to contemporary accounts, they can be taught to realise the value of obtaining information from persons who lived either during the occurrence of the events they chronicle or soon afterwards. The difficulties of ascertaining the truth of such sources will soon become apparent to the pupil who takes any interest in his work, and thus a capital training in judgment and in the weighing of evidence can be obtained by such students.

This method of reading contemporary sources is particularly helpful in the case of economic history: for instance, several quotations from the Anglo-Saxon Chronicle can be chosen which throw considerable light upon the social conditions of the times; from the Domesday Book interesting extracts can be taken illustrating the extent and the mode of agriculture at the time of the great survey. A thirteenth-century work on agriculture called the "Seneschaucie" gives full details of the work of various officials connected with manorial estates. The duties of the seneschal, the bailiff, the provost, are all carefully set down; such information adds considerably to our knowledge of the condition and progress of agriculture during that century. The records of the Black Death give a most vivid account of the sufferings of the people during that dreadful calamity. Coming down to more recent times the sources increase in magnitude, and the teacher will have no difficulty in obtaining excellent quotations. How many readers of "Robinson Crusoe" have read Defoe's account of his tour through England? Yet that journal is of peculiar interest, and gives some very informing references to the condition and mode of several manufactories in this country. Arthur Young's Tours in England during the eighteenth century, though primarily devoted to agricultural matters, contain much valuable information on the condition of the roads during the reign of George III., from 1760 to 1780. John Wesley's Journal, too, throws considerable light upon the social condition of the people in the early years of the same century.

But the teacher will not confine the pupil to the reading of text-books, the consulting of source-books, and the making of notes! The magic lantern can still be called into requisition to illustrate some of the economic features of the period of study. Perhaps some time in the near future the teacher will be able to have a cinematographic lantern which will show the methods of transit, modes of buying and selling in various parts of the world, the progress of machinery in the methods of manufacture in a more vivid and realistic manner than is possible at present. Such a course would introduce him to economic conditions of life in other parts of the world, and so would widen his outlook. Meantime the teacher must try by clear oral exposition, and by any means of illustration he can think of or devise, to make clear these "outward signs" of economic development.

So far the teacher has kept in mind the unity of history. He has not spoken about economic history, political history, ecclesiastical history, and so on; the various aspects, of course, have been mentioned, but only as they bear on one another, and never in a manner to cause the pupil to believe that one aspect is more important than the other. In dealing with the story of civilisation he will endeavour to catch the spirit of the period and to make that the basis of his scheme of lessons. In some ages the spirit of religion is the more prominent, in others it is martial rivalry, and so on; yet the other factors will not be ignored, but will receive due notice according to their relative significance.

In the highest forms, however, the student can well be taught to recognise the importance of the various factors, though their interaction upon one another should never be lost sight of. The teacher can now safely allow the student to consult the authorities, and the mode of procedure may approximate to the more formal lecture type, or to the more stimulating informal discussion, according to the size and mental calibre of the students.

Stories from Ancient History. By E. Bowyer. 136 pp (Methuen.) 1s. 6d.—These stories are collected from Egyptian, Babylonian, Phoenician, Greek, and Roman history, beginning with an account of very early Egypt and ending with Constantine. There are two maps and an index. Apparently the author does not care to distinguish between legend and history, and his Biblical criticism is old-fashioned, but the stories are well told, and each ends with a question which is "intended to be suggestive." It is often too difficult for children.

A SCHOOL VISIT TO WINCHESTER.

By Robert J. Finch,
Hornsey County School.

EFFECTIVE teaching in English history by modern methods involves the skilful utilisation of every means which aids the imagination to reconstruct an ever-changing pageant of historical scenes—which makes history *real*. The old method which exploited the child's credulity and his marvellously tenacious memory at the expense of his intelligence has given place to the new method of learning by direct experience. In most secondary schools full advantage is taken of the opportunities afforded by the school area for the study of local history. If the neighbourhood is so fortunate as to possess historical monuments of national interest, so much the better for the school. But in any case it is difficult to imagine a district so fortunately situated as to afford materials sufficient to illustrate effectively the whole romance of English history. It becomes necessary, then, for the teacher to look farther afield and to select for study such centres of historical interest as will supplement and amplify local materials.

Hornsey lies within an hour's journey of most of the places of historical interest in London. But in spite of this vast store of material available for study, it has been realised that in many ways it is incomplete and insufficient. Many links are wanting, and many are weak, in the chain of historical sequence. An attempt has therefore been made to supply these deficiencies by the organisation of expeditions to places of historical interest within a half-day's journey of London. Pupils of the 1st and 2nd Forms visit St. Albans in connection with the history of Roman Britain; the 3rd Form visits Winchester in illustration of British history to 1300 A.D.; and the 4th Form spends a day at Cambridge in connection with the history of the English Renascence. Every means is utilised to make these visits thoroughly educational. Each fits into its proper place in the scheme of instruction and forms the culminating point of a series of studies leading directly to it. Special preparatory lessons in architecture, history, and geography are given, all fully illustrated by pictures and lantern slides. Each pupil is provided with a guide-book, which is supplemented by a printed note-book containing maps and diagrams [1] specially drawn by the teacher, and notes which direct and systematise the pupil's study of the guide-book.

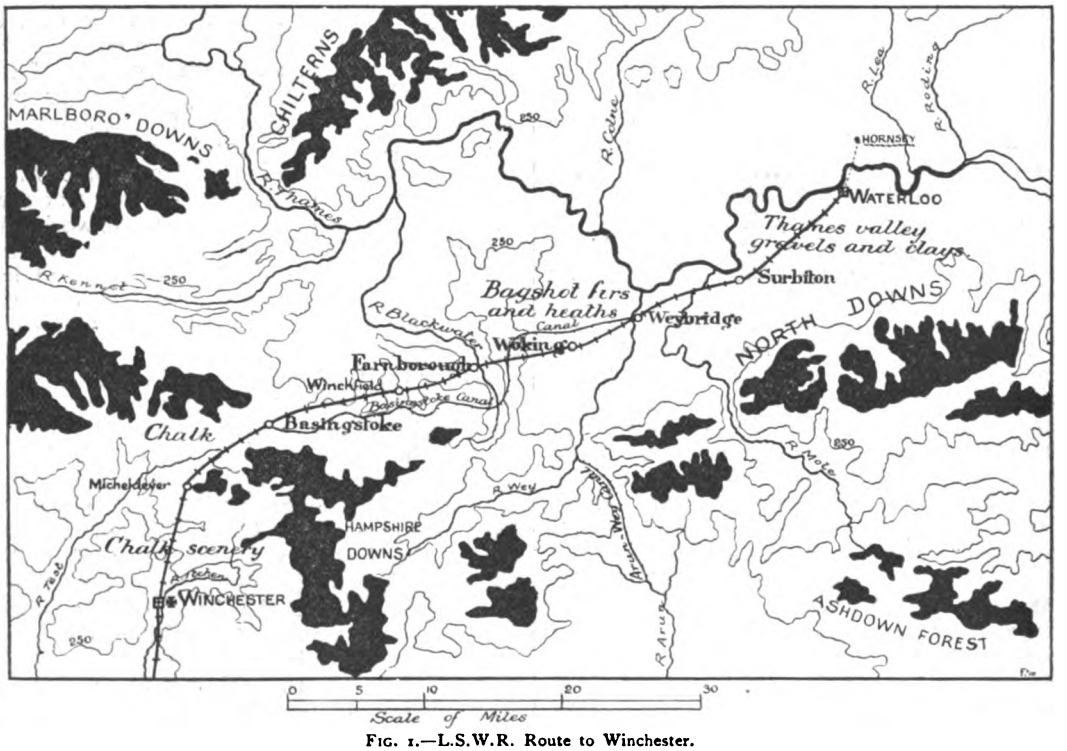

Fig. 1.—L.S.W.R. Route to Winchester.

England has few cities round which the romance of history hovers more alluringly than round Winchester. The history of Winchester is for hundreds of years the history of England; her story that of the rise of the English monarchy and of the welding together of the English nation. As the centre of the social, political, and ecclesiastical life of early England, she was intimately associated with almost every person and event of importance in this most stirring period of her history.

On June 24th last, about seventy pupils and five members of the staff caught the 7.40 a.m. train

[1] The illustrations here reproduced are from the pupil's note-book compiled by the writer.

at Waterloo for Winchester. The pupils, quite accustomed to this pleasant form of education, soon settle down to their work of identifying places of interest and verifying the botanical, geographical, and geological data in the school guide-book. The Brooklands Motor Racing Track, the Mohammedan Mosque near Woking, the mausóleum of Napoleon III. at Farnborough, the ruins of Old Basing House, and the ancient British earthworks at Winklebury are all to be seen clearly from the railway, and each secures its full meed of attention, lively discussion, and portentous note-book entries. Some emphasis has been laid in the class lessons on the changes of scenery to be noted on the journey, and pupils are keenly interested in observing how the flat alluvial Thames valley, with its market gardens, gives place to the Bagshot series of sands, gravels, and clays between Walton and Winchfield. The firs and heaths characteristic of the sandy outcrops, and the picturesque lakelets held up in the clayey hollows, indicate fairly clearly the successive exposures. The scent of Surrey pine woods is borne to us as the train labours up the gradient in a steep cutting the gravelled browns of which are relieved by broad patches of the purples of heather and the golden yellows of gorse and broom. Then at Basingstoke are seen the wide, open spaces of downland, broken here and there by the white scars of chalk pits and the warm olive of plantation-filled hollows. Often in place of rolling grassland there are cultivated slopes, chequered and geometrically patterned fields. And so to Winchester.

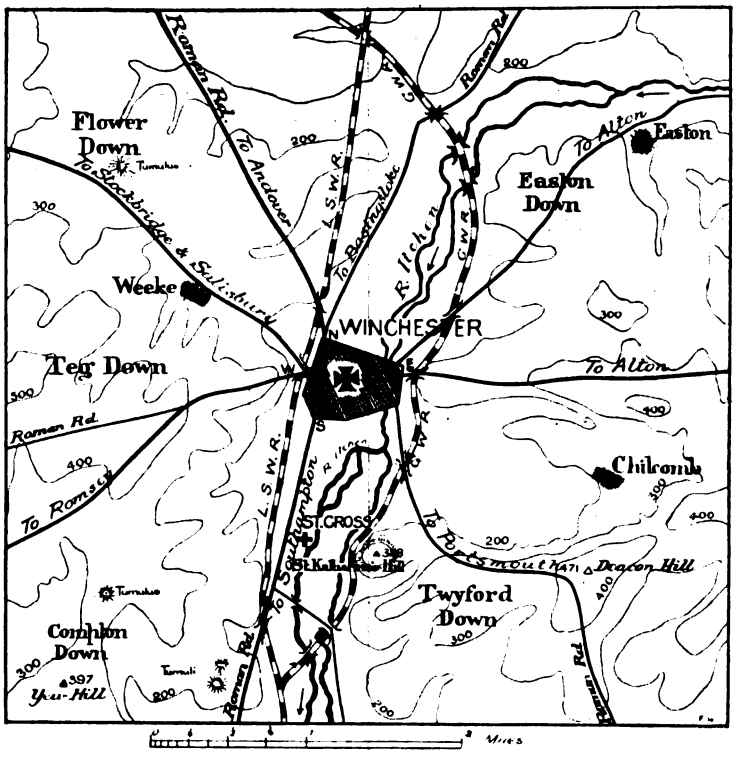

FIG. 2.—Site of Winchester.

FIG. 3.—Section across Itchen Valley.

The spirit of commercialism which pervades our capital city, and blinds us to its architectural beauties, and renders it difficult for us to appreciate the romance and poetry of its history, has no place here. An atmosphere of Mediævalism and the cloistered quiet of Monasticism brood over the city and carry us centuries back to the days of Alfred the Great and mild Edward the Confessor. Here lies the real advantage that historic Winchester possesses over historic London. She has a distinctive *genius loci* which London lacks. None can visit the ancient city without coming under the influence of its spell.

It is impossible in this short paper to describe adequately the architectural beauties of the city, or to detail the wealth of historical associations which cluster round every famous building. Mere mention of these must suffice. Readers who wish to undertake the journey with their pupils may be referred to the many excellent guide-books published in the city. The following is a brief outline of our itinerary.

The footpath by the railway leads us past the Plague Monument to the West Gate, through the arch of which we snatch a glimpse of the quaintly gabled High Street as we pass to the Castle Hall, where the erudite custodian details with loving care the historical importance of the ancient building, and endures with the patience of an enthusiast the rain of questions showered on him by his audience, not a whit less enthusiastic than he. The King's "speak-pipe" and the Round Table of Arthur of Tintagel invest the place with just that air of mystery and romance so alluring to young people. Down the Castle Hill we reach the West Gate, with its store of treasures—part of the prow of a Viking ship, the old "Moot Horn" of the Borough, and the set of standard weights with the famous Winchester Bushel of Henry VII. We climb to the top of the gate and get a fine view of the city, overshadowed eastward by the steep slope of St. Giles' Hill. Farther south rises, sentinel-like, the rampart-encircled St. Katharine's Hill, with its coronet of trees. We peer down through the machicolations of the outer gate and realise some of the grim satisfaction with which the defenders

of the city must have noted the effects of the torrents of boiling water and molten lead poured down on assailants.

A walk down the picturesque "High," overhung with odd gables, brings us to the famous City Cross of Cardinal Beaufort—the "Butter Cross," either because its cost was defrayed by licences to eat butter in Lent, or, what seems more likely, because dairymen used its steps on market days as shelves for their butter. A queer little passage near leads us to the fine avenue of elms in the Cathedral close—a vista of green, terminated by the grand west front of the Cathedral. Here the verger takes charge of the party, and under his skilful guidance we review in an hour the long centuries of the Cathedral's history. The grave of Rufus under the Great Tower, and the six mortuary chests on the side screens of the choir, containing the bones of Cynegils, Egbert, Ethelwulf, and Canute, impart a strange realism to the events and characters we have been studying, and, judging from the pupils' records of the journey, few of to-day's experiences produce a deeper impression on their minds. As an architectural study alone, the Cathedral is worth a series of visits. Norman, Early English, and Perpendicular—all are here in the finest preservation for comparison and contrast. The actual processes by which that master builder, William of Wykeham, converted the Norman nave to Perpendicular arcade stand revealed by excellent examples of intermediate stages of the work. In the crypts we see traces of the great work now in progress of repairing and rebuilding the Cathedral foundations—a work rendered imperative by the gradual settlement of the whole eastern part of the Cathedral and the consequent dangerous cracking of the walls.

From the Cathedral we make our way through the King's Gate to College Street and Wolvesey Castle, on the site of which stood Alfred's palace. Here Alfred directed the writing of the Anglo-Saxon Chronicle; the actual manuscript, kept for years at Wolvesey chained to a desk so that all who came might read, is now in the Parker collection at Corpus Christi, Cambridge. The crumbling walls before us are those of the great castle of Bishop Henry de Blois, brother of Stephen.

Our route now lies across the lush meads of the Itchen valley to St. Cross. A finely developed flood-plain here offers itself for study. The Itchen meanders across it between chalk downs on either side, dividing into many streams, and rejoining only to branch off again. We follow the path along the banks of a clear stream, past the playing fields of Winchester College. Here and there occur traces of the former utilisation of the water-power of the stream in old weirs, sluices, and ancient water-wheels. At the Hospital of St. Cross, the fine old church and the dining hall of the Brethren claim our attention. The hospital still retains its ancient charter and buildings, and dispenses charity to-day as it has done for 760 years.

On our way back to the station at Winchester, we pause in the Broadway before the fine statue of Alfred the Great, whose highest qualities as man and monarch stand here symbolised for us in stone. The sculptor has not only expressed the vigorous manhood of the warrior-king who strove successfully against the Danes; he has limned in the face of the statue that kingly grace and beneficence we associate with the great king, who proved himself the greatest of all by becoming the servant of all.

THE TEACHING OF GRAPHS IN SECONDARY AND TECHNICAL SCHOOLS.

By M. E. J. Gheury, F.R.A.S.
Lecturer at the Woolwich Polytechnic.

THERE are two classes of students who study graphs, and, accordingly, we may classify in two broad categories the teachers who have the task of imparting knowledge to these students.

There is first the student who has nothing to do but to study: he is generally a mere boy, rarely knows the value of time or the necessity for knowledge, and he follows a regular course of studies. He is in the hands of secondary- or elementary-school masters who have generally had some professional training or obtained a degree, but little or no practical knowledge of the conditions in which the knowledge they impart to a student will be instrumental in producing actual results of some utility in practical life.

Then there is the student who is engaged in wage-earning occupations in "works" or drawing offices, &c. He has very limited time to give to study, and this only in the evening, when he is already tired by a long day's work. He is a young man who realises that lack of knowledge is a serious handicap in life. He years ago left school, and is, as he puts it himself, "rather rusty." He is under the care of instructors who are rarely trained teachers, but have, as a rule, qualifications of an entirely different nature—a technical diploma, or experience of a technical kind acquired in the exercise of professional duties.

The schoolmasters are generally preparing material for the instructor in the technical school. They have, as a rule, no definite aim beyond preparing pupils for certain examinations. They must direct their energies towards imparting that kind of knowledge which will enable their students to satisfy unknown and possibly whimsical examiners. The technical teachers, on the other hand, have to prepare students for examinations of a more practical kind, and, being generally practical men, knowing that works managers and others in similar positions think little of examination certificates, they keep a less sharp eye on examination papers, taking them more as a guide supplementing the details of a general syllabus and giving suitable applications and examples to illustrate their teaching. They direct more specially their endeavour towards giving the students a sound knowedge of what they know by experience they will want most in

their everyday work, as they know quite well that the diversity of questions that may be set in an examination on a technical subject defies any attempt at cramming.

The difference between the methods of both kinds of teachers is specially apparent when the teaching of graphs is considered. As an examiner of some of the answer papers written by boys sitting for a competitive public examination, I have been impressed deeply with the uniform lack of knowledge of the most elementary points of importance in the plotting of graphs. As this has been noticed by many examiners, it cannot be the result of the general ignorance and backwardness of the candidates, but must be an indication that the principles of graph-plotting have been put before the candidates in an inadequate fashion. It is noticeable that the points upon which no attention whatever is bestowed, even by students who otherwise show they know something about graph-plotting, are mostly those which may be considered as unimportant by teachers unacquainted with works' requirements, but the neglect of which renders a graph entirely unsuitable for any *practical* use whatever.

Such defects are:

(1) Scales absent altogether.

(2) Scales without any indication of the quantity they are to be used in connection with.

(3) Scales (other than purely numerical) without the name of the unit used, the magnitude of the quantities remaining a mystery.

(4) Scales numbered solely with the values to plot, irregular or fractional as these may be, so that it is a puzzle to read off anything from the graph; this is but a particular case of (1).

(5) Scales with three or seven squares to one unit, so that it is impossible to read them decimally.

(6) Scales unsuitably chosen, giving the graph a stunted appearance.

(7) Graphs with points outside the squared paper, either in the blank margin, if there be one, or on a piece of paper pinned to the edge.

All these points are of the greatest importance, and also of such an elementary nature that it is impossible to admit that their almost universal neglect is due to carelessness on the part of the pupils. It is equally impossible to reject the conclusion that this is merely because they have not had their attention directed to these points when starting the study of graphs. This omission is natural when one remembers that with few exceptions boys are introduced to the plotting of graphs by teachers who have never had practical experience, and do not realise the requirements of the practical man.

The same conclusion is forced upon one through the perusal of examination papers, where questions on graphical solutions of equations invariably appear, as if this were a kind of application continually performed outside the class-room. Yet the practical man *never* uses a graph to find the solution of, say, a quadratic equation, while he ***continually*** uses it to obtain correlated values of two variables generally for interpolation purposes, and hence requires a ***plain scale, easy to read rapidly and accurately.*** It cannot, therefore, be too much impressed upon teachers, and also upon students, that ***the whole utility of a graph*** depends upon the suitable selection and correct marking of these scales. The aim to keep in view is to have the scales as clear as possible, so that they may be used with great ease, and also to have the graph self-contained—that is, supplying all the information required for its use without reference to any text, provided that its nature and purpose are known. I have seen a works' manager throw in his waste-paper basket a carefully inked-in graph embodying the result of some test, one of the scales of which had *three* squares corresponding to one unit, while on his table was another the graph of which was cancelled by a zigzag of blue pencil; but on the scales, ***which were convenient,*** he had himself plotted another graph for use. With bad scales nothing can be done, while good scales, even if the graph be rough, can be put to useful purpose.

The nature of the elementary questions set in most examinations is to be blamed for this state of things. With the exception of the papers set for the Board of Education Practical Mathematics examinations, all that is required is "the plotting of easy graphs"—that is, the use of graphs for the solution of easy mathematical equations. To solve these questions satisfactorily, only numerical scales are required, involving no mention of units, and, x and y being invariably in the same position, the importance of naming the scales is overlooked, while the graph always passes exactly *through* every plotted point. It is enough to give students a bias (which will require months of patient effort to destroy) to prepare them for these examinations alone, and there is little doubt that this procedure is the cause of the general evidence of indifferent graph-plotting complained of. To initiate pupils to graphs in this fashion is as bad as to begin geometry by the various problems relating to the construction of triangles before the simplest facts about triangles have been taught; nay, it is worse, for the latter method would *not* give the pupils wrong ideas about triangles.

A secondary-school teacher of mathematics either has to ignore the portion of graph-plotting which would most appeal to his pupils, as being that which they meet often outside his class—in newspapers, periodicals, and class books—which would impress upon them exactly what a graph is and for what it is used, because such teaching would seem out of place in connection with the papers set at the examination these pupils have to sit for in accordance with which his syllabus is framed. Or else he must wander widely from the latter and introduce much extraneous matter, a thing which he has no time to do even if it were allowed.

These necessary fundamental notions might with much advantage be given by the science master, but to him graphs are only accessories,

and he has little time to spend on them, and the opportunity for sound teaching in graphs, which could be taken advantage of by some mutual understanding, is lost because of the too frequent lack of correlation between the work of the mathematical and science teachers. As a result, the examiners are dissatisfied—yet they reap what they have sown. Had they agreed that, before becoming efficient in the *application* of graphs to the representation of the variation of a function and to the solution of equations, pupils should be expected to show some knowledge of various types of graphs and the way in which they are to be plotted—that is, some understanding of *what a graph means*—the harvest would have been more satisfactory, as each subject then would fit naturally in its own place, coming in the right order.

The technical teacher has also to suffer, for he has to fight strenuously against the faults mentioned, and the tendency to draw all graphs indiscriminately exactly through every one of the plotted points; and he has to waste much time and energy in the exorcism of such harmful notions. The fact that these notions can persist throughout one's training and still flourish in one's maturity is shown by the abundance of faulty graphs to be found not only in text-books, but also in works of a higher standard. It is a subject for wonder that it is possible for a teacher to publish a book on graphs and to set in it exercises such as this: "Plot the population of the following towns from the given table: London, Liverpool, Birmingham . . . &c." Such a teacher, after teaching graphs probably for many years, shows that he is still ignorant of what a graph is, namely, the representation of the simultaneous and correlated variation of two variables *susceptible of taking numerical values*. This is by no means the only example that supports my statement, based upon personal experience and observation, that "few things can be, and are, as badly taught as graphs."

What would be the best course to follow in the teaching of graphs? Perhaps the following scheme will give secondary-school masters an indication of what we in the technical schools would like our pupils to know:

I. The determination of the position of a point by rectangular co-ordinates. Representations of the successive values of some easily observed variable quantity (class attendance, temperature, barometer, &c.). This would lead to the introduction of the notion of correlated variation and its representation by graphs plotted on *carefully selected and defined scales*, and would give some idea of which quantity to plot horizontally and which to plot vertically. The notion of continuous, discontinuous, regular, or irregular variation as illustrated by the above examples might follow.

II. The classification of graphs in four types, according as the variable quantities vary continuously or discontinuously, regularly or irregularly, each type being plotted in a definite manner always.

(*a*) *One quantity or both do not vary according to any law. The graph will be irregular.*

Type I.—One quantity or both do not vary continuously. The graph is a succession of straight lines joining consecutive points. Examples and applications.

Type II.—Both quantities vary continuously. The graph is a smooth irregular curved line passing through all the points. Examples and applications.

(*b*) *Both quantities vary according to some law. The graph will be regular.*

Type III.—The values to plot are obtained by calculation from a formula and are consequently correct. The graph is a smooth regular line passing through all the points. Examples and applications.

Type IV.—The values to plot are obtained by experiments and are affected by various errors. The graph is a smooth regular line passing evenly amongst the points, but not necessarily through them. Examples and applications.

III. Interpretation of the physical meaning of features of graphs, maxima, minima, rate of change, &c.

The above consists of *fundamental notions* which should be acquired before any intelligent application of the plotting of graphs can, generally speaking, be expected.

Graphs of Types III. and IV. can *then* be studied in the mathematics class and the laboratory class respectively. The study of the straight line belongs to both, and should not be confined by the teacher of mathematics to the solution of simultaneous equations, as it seems to be now, for this is very rarely the use to which they are put in practice. Straight-line graphs should be considered mainly as a means of finding the constants in a linear law connecting two quantities of which several simultaneous values are available, for it is for this purpose that they are mostly used outside class and examination rooms.

The plotting of higher functions can then be dealt with with much better results than if the preliminary work had not been gone through, as now the students will have a thoroughly sound knowledge of the meaning of a graph. At this stage the slide-rule should be introduced, and each student induced to buy one *and to make use of it continually*; for without a slide-rule the plotting of functions can be but tiresome, even if examples of a practical nature are selected by a good teacher wishing to keep his students fully alive to the use made in everyday life of the material he puts before them.

Hayward's Botanist's Pocket-book. Revised and enlarged by G. C. Druce. xliv+280 pp. (Bell.) 4*s.* 6*d.* net. —It is nearly forty years since this—perhaps the most widely used of the pocket floras—was first published. The present edition, the thirteenth, retains the original plan, with the arrangement of artificial keys to the natural orders and genera which was a popular feature of the earlier editions, but contains several innovations which will undoubtedly add to the usefulness of a book of proved merit.

THE POSITION AND TRAINING OF TEACHERS IN GERMANY.

II. SECONDARY SCHOOLS.

By THOMAS F. A. SMITH,
English Lecturer in the University of Erlangen.

YOUNG men who wish to become teachers in secondary schools (Mittelschulen) must themselves have passed through the nine classes of one of the three types of Mittelschulen, viz., Gymnasium, Realgymnasium, or Oberrealschule. The third excludes Latin from its curriculum, and therefore those who have obtained their "Absolutorium" in that type of school must go through a course of Latin in the university to pursue certain branches of study. All German, Austrian, Swiss, and many other European universities accept the "Absolutorium" certificate in place of a matriculation examination. At German universities, in particular, the ancient liberties known as "academische Freiheit" still prevail. Residential universities are unknown; the only rule imposed is that the student must reside in the town, which leaves him free to choose lodgings and mode of life suitable to his income. Then he works or plays to the top of his bent, and after the nine years' hard grind in the secondary school he generally begins by playing in the university. In the case of students who enter fighting corps and such-like, the play-time lasts four terms, *i.e.*, two years.

During his school career the German lad has practically no occasion offered him to specialise; this stage begins in the university, and it is only in the case of men who wish to become teachers of Latin and Greek that men continue their classical studies at the *Hochschule*. All teachers in secondary schools are trained specialists, and must have been through a university course of at least three years. There is no overlapping of elementary and secondary school work, as is the case in England; they are distinct classes socially and professionally—academic and non-academic.

It is not proposed to discuss in this place the student's education previous to his entering the university at the age of nineteen, but rather to give an account of the higher education and training accorded to and demanded by the State from such as wish to become teachers. The examining committees in Prussia and Bavaria consist of professors selected from the universities and gymnasien, and every year one or two of the examiners give place to others. In Prussia the regulations are as follows.[1]

Candidates for the examination must fulfil these conditions:

(1) Produce the *Reifezeugnis* of a Gymnasium, Realgymnasium, or an Oberrealschule.

(2) Produce evidence of three years' study at any German university.

(3) Candidates in mathematics, physics, and chemistry may have studied during three terms (1½ years) at a Polytechnicum.

(4) Candidates in English and French may study up to two terms in any university in those countries.

(5) Besides the necessary lectures in his special subjects the candidate must also have attended lectures of a general educational nature.

In reality there are two examinations—a general and a special. Both are written and *viva voce*. The written part consists of two theses, one for the general and one for the special examination—the latter, of course, dealing with some branch of the man's special subject. Sixteen weeks are allowed for the dissertations. The actual examination consists of three hours' papers in each subject, and a two hours' *viva voce* examination before the full board of examiners; while throughout the whole, the pedagogy of secondary education is taken into account. Whatever special line the candidate wishes to take up, he must pass the general part of the examination, which includes the following subjects: philosophy, pedagogy, German literature, and religion.

There is an interval of some months before the *Fachprüfung*, in which the authorities impose the condition that the candidate must take one of the following combinations, to which he may add any subject from another combination:

Latin and Greek.
French and English or Latin.
History and geography.
Religion and Hebrew or Greek.
Pure mathematics and physics.
Chemistry, including mineralogy and physics, or, instead of the latter, botany and zoology.

German may be substituted for any one of the subjects in the first three.

The dissertations mentioned above, if dealing with classical subjects, must be written in Latin, and if on any French or English theme, then in the language in question.

There are two grades of qualification possible in each subject, viz., *erste und zweite Stufe*. In his special subject the candidate must get the first grade, which qualifies him to teach his subject in any of the nine classes in a secondary school, and in subjects for which he only obtains the second grade qualification he is limited to the six lower classes. The results of the examination are expressed in three marks: (1) pass, (2) good, (3) with distinction. For a pass the candidate must gain the first grade in one subject and the second grade in two others. To be classed under either (2) or (3) it is necessary to gain the first grade (the qualification to teach in all nine classes) in at least two subjects. The fee for the entire examination is 60 marks; for subsequent attempts, 30. The tendency in Prussia is thus seen to be the creation of teachers who are specialists in two or three subjects, and the main point to notice is that candidates have a rather wide choice of subjects.

The academic training preceding this examination deserves a few words. Which and how

[1] "Die Ordnungen für die Prüfung, für die praktische Ausbildung und die Anstellung der Kandidaten des höheren Lehramts in Preussen." Edition 1908. (Halle.)

many lectures he shall subscribe to is a matter entirely in the decision of the student, and having paid his fees he can attend or stay away just as he pleases. When the young man has the means he will probably waste one or more terms. But nearly every university professor is the director of a *Seminar* (to become a member of this the student must have the director's permission), and it is in the *Seminar* that the hard practical grinding is done. The *Seminar Uebungen* are always *privatissime* and often *gratis*. Take the case of students of modern languages in Erlangen University. A man enters for a course of lectures—four weekly—held by the professor of English, and pays the fee of 16 marks for the term. After this step the professor, who is also director of the *Seminar für englische Philologie,* can give him a card of membership for the Seminar. The seminary, consisting of a lecture hall and a room for private study, contains several thousand books forming a reference library. Every member has a key, and may use these rooms from 8 a.m. to 8 p.m. Furthermore, he is entitled to visit the practical *Uebungen* free of charge. These consist of Old and Middle English classes conducted by the director, three hours weekly, which of course are made the foundation for instruction in historical grammar, Lautentwickelung (development of sounds), &c.; in a word, the pure science of philology. Besides this the English lecturer conducts two courses, each of three hours, for beginners and advanced students respectively. The former, as a rule, continue from the point where the secondary schools have left off, while the latter are occupied in studying the most difficult English texts. Modern English literature, command of the written and spoken language, grammar, and every phase of modern English life (Realien) form the material in which the lecturer imparts instruction.

An identical institution exists for French. The same holds good, too, for students of the Classics, mathematics, geography, history, &c. Every *Fach* is represented by a *Seminar,* and it is there that the professor becomes the practical teacher. A student may play truant from formal lectures, but non-attendance at *Seminar Uebungen* is followed by expulsion from the institution—not from the university. All candidates in the final examinations for teachers are required to produce their *Kollegienbücher,* bearing the signatures of the professor or other *Dozenten* confirming their attendance at these practical exercises.

The twenty-two German universities form together one confederated whole, just as some twenty colleges form Oxford University. Thus students possess the invaluable privilege of wandering from one university to the other, and so it comes about that there is hardly a teacher of any subject in German secondary schools who has not heard the lectures of some five or six leading specialists in his subject, and been well grounded by them in the different seminaries. Prussia demands a three and Bavaria a four years' university course before the teacher's examination may be attempted, but as a matter of fact by far the greater number of candidates have studied for five or six years before passing the two examinations. In the case of modern language men this often includes from six months to two years abroad.

Having completed his academic career, the candidate must proceed to his two years' practical training, a *Seminarjahr* and a *Probejahr.* Here it is perhaps best to let the official instructions speak for themselves.

Seminarjahr.[1]—A. During the seminary year the candidates have to be made thoroughly familiar with the science of education, especially as applied to higher schools, as well as to be made acquainted with the methods of imparting instruction in individual subjects, and to be trained practically to be teachers and educators.

B. The *Probejahr* (practical year) serves to train the candidate to apply his knowledge and theory acquired during the preceding *Seminarjahr.* Such *Praktikanten* must be employed in schools to which no *Seminar* is attached.

A seminary may not contain more than six candidates, and schools with six classes (*Realschulen und Progymnasien*) may not have more than two *Praktikanten* attached, while a full nine-class school may not have more than three.

At least two hours every week must be devoted to discussions, of which the following themes should be made the basis: The science of education and instruction; its application to higher schools; method and procedure in single subjects, which will also give occasion to consider the aptitude of individual candidates. History and development of the higher school system; important educationists, together with questions and phenomena of the modern school world. Constitution and organisation of higher schools; curricula prescribed for various types of secondary schools; regulations for the examination of classes, granting of certificates, &c. The principles underlying school discipline; relationship between school and home; main features in the science of school hygiene; constitution of the governing and inspectorial authorities for schools; official instructions to teachers and professors in secondary schools; reports and official correspondence. Instructions for listening to teachers' lessons and preparation for the candidate's own first practical attempts; correcting pupils' exercises, as well as the discussion of trial lessons from the personal and expert point of view. Verbal reports on topics suggested by the director, as an exercise in extemporaneous speaking.

Minutes of these discussions must be kept by the candidates in turn; these, together with other written work, to be exchanged between the directors of different seminaries.

In parallel and organic connections with this theoretic course the candidate must be introduced to the field of practical work; this is achieved

[1] *Op. cit.*, pp. 35-44.

through attendance at lessons given by others and his own attempts; all plans to this end to be made by the director. By means of this practical work the candidate must gain a general view of, and insight into, the tasks and aims of the school as an educational unit; the purpose and work in different subjects; the graduated stages of knowledge in the different classes, as well as the peculiarities and intellectual level of those classes in which he must give lessons. All candidates must hear the lessons given in German.

The teachers, whose lessons the candidates attend, must be notified previous to such visits. It is the duty of these teachers to give the candidates full information concerning the attainments of the class, the aim of his lesson, the problems to be solved and their solution; in short, to further in any way possible the practical training of the men.

So soon as the candidate has had time to feel at home in the institution, he must begin giving criticism lessons. These must be given in the presence of the director, *Fachlehrer* of the subject in hand and the remaining candidates. At the commencement the criticism lessons must be limited in duration and amount of material to be taught, and afterwards increased gradually so as to enable the candidate to acquire self-reliance and independence. Each man must give a lesson at least once a month, and all have the duty to attend criticism lessons, which must be discussed in a subsequent conference.

So far as opportunities present themselves, occasional visits should be made to educational institutions in the district. During the last two months of the year each candidate must prepare a dissertation on some subject chosen by the director.

Three weeks before the end of the year the director has to hand in to the authorities a detailed report concerning the capabilities and work of each man. Candidates who have not attained the required standard of proficiency may be allowed to remain another half or whole year in the seminary, while those who appear to be unfit for the teaching profession will be informed to that effect and excluded from the *Probejahr*.

PROBEJAHR.—The director of the school is to be supplied with a report of each candidate's work, &c., during his *Seminarjahr*. The lessons of the probationers must be carefully supervised, and may not exceed ten per week. Emphasis is laid upon German lessons, whether the candidate is a specialist in that subject or not.

As evidence of the pedagogic experience gained during the year, each candidate must write a report of his own work and hand the same to the director, who has likewise the duty to report on the candidate's *Probejahr*, and forward the latter's report, with his own remarks about it. From these materials the central authority draws up a final report concerning each man. In doubtful cases this practical year may be prolonged. Finally, the names of the men are entered into the official list and called up for service as vacancies arise. Their future pensions are calculated from the date of having their names entered into this list.

In Bavaria the training of secondary-school teachers differs in several essential points from those sketched above. There is less freedom in the choice of subjects. It is utterly impossible for a teacher of modern languages to teach a classical language and *vice versa*. The subjects are grouped as follows: (1) *Altphilologie* includes Latin and Greek as principal subjects, and German, history, or geography as *Nebenfächer*; (2) *Neuphilologie* includes English and French; (3) the third group is mathematics and physics.

In each of these the examination is divided into two parts, the first of which may be taken after three years, and the second part after a further twelvemonth's study. The men who wish to qualify in group (3) may take the first examination after two years' study, but the second part, as in the other groups, only after a four years' university course. On this occasion it is only possible to enlarge upon one of these groups, and for this purpose I shall choose the modern language group.[1] The examining commission for the first part is divided, viz., one section for French and another for English. Candidates may take the two languages together after the sixth term (three years), or may separate them, in which case the other can only be taken after an interval of one year. In practice they are nearly always separated, as the requirements are very considerable.

EXAMINATION IN FRENCH.—A. The written examination includes (1) a composition in German about a general subject, five hours; (2) a composition in French on a general subject, four hours; (3) a translation from German to French, four hours; (4) a dictation, prose, and poetry in French, two hours; (5) translation from French to German, two hours.

B. *Viva Voce.* (1) Translation of a piece of French prose and poetry. Questions, answers, and explanation in French language. (2) History of French literature from the sixteenth to the end of the nineteenth century, as well as acquaintance with the principal works from this period. (3) Phonetics. Under heading No. 1 the candidates are tested in the rules of grammar, etymology, and metre.

The following books are prescribed for the candidate to read thoroughly:—*Corneille:* "Le Cid," "Horace," "Cinna." *Racine:* "Andromaque," "Phèdre," "Athalie." *Molière:* "Les Précieuses ridicules," "Le Tartufe," "Le Misanthrope," "L'Avare," "Les Femmes savantes." *Boileau:* "Satires" (Books II. and IX.), "Art poétique" (Book III.). *Lafontaine:* "Fables" (Books I. to III.). *Chateaubriand:* "Itinéraire de Paris à Jérusalem." *Lamartine:* "Méditations poétiques." *Mme. de Staël:* "De l'Allemagne." *Béranger:* "Chansons" (selection). *V. Hugo:* "Odes et Ballades" (selection), "Hernani." *Aug. Thierry:* "Récits des temps mérovingiens."

The English examination is a replica of the French, but it may be of interest to quote the prescribed books, if only for the sake of comparison:—Selection of folk-songs. *Marlowe:* "Faustus." *Spenser:* "Faerie Queene" (Book I.,

[1] "Die Prüfungsordnung für das Lehramt an humanistischen und technischen Unterrichtsanstalten im Königreich Bayern," published in Ansbach, 1905.

Cantos I. to III.). *Shakespeare:* "Hamlet," "Macbeth," "Julius Cæsar," "King Lear," "The Merchant of Venice," "Romeo and Juliet." *Milton:* "Paradise Lost." *Pope:* "Essay on Criticism." *Byron:* "Childe Harold's Pilgrimage." *Sheridan:* "School for Scandal." *W. Scott:* "Ivanhoe." *Dickens:* "David Copperfield." *Longfellow:* "Evangeline." *Macaulay:* "History of England" (chapters i. to iii.).

The second half of the examination, which may only be taken after an interval of twelve months at the least, consists of a dissertation on some theme selected for the candidate. It must be finished and handed in by May 1st. The *viva voce* takes place in the following October, and covers—(1) subject of the thesis; (2) Old French, Anglo-Saxon, historical French and English grammar, Old French and Anglo-Saxon literature ("Aucassin et Nicolete," "Beowulf," Chaucer); (3) theory and history of education; (4) philosophy, with special reference to modern French and English philosophers; (5) a criticism lesson in one of the Munich secondary schools.

The Bavarian authorities also demand practical training, but only one year. During the *Seminarjahr* each candidate receives an allowance of £3 monthly. One of the most recent innovations in such seminaries was that made in those for modern language candidates in 1908. Since that time the lecturers in French and English in the different universities have been called upon to give two hours' practical training every week to the men in the neighbouring seminaries. The present writer gives instruction in English, two hours weekly, to the candidates in two seminaries —Erlangen Gymnasium (four men); Nuremberg Realgymnasium (six men).

After the *Seminarjahr* the candidate must wait for an appointment. He generally goes abroad or accepts a post in a private school for a year or so. Finally, the Government is not ungenerous in granting travelling scholarships to teachers. These scholarships are £45, £35, and £25 in value, and are granted principally to language teachers—the modernists to visit England or France, and the classicists Italy and Greece.

One other point concerning the practical year deserves notice, and that is the broad view which the young men gain of the general lines and aims of education. They visit and study all the higher schools in the district, and also give criticism lessons in them. Thereby every specialist makes a thorough acquaintance with the aims and work of other specialists, and learns to appreciate the efforts of others in the educational world.

It is to be expected that the subjects taught will be grouped differently in the next year or so. The plan proposed is French and Latin + history or geography; English and German + history or geography. Among the modernists there is a strong feeling that English (representing Germanic philology) and French (representing Romance philology) should not be taught by one and the same man. The above proposal is an attempt to solve this problem by combining only languages which are in the nature of things closely related to each other. Such grouping is possible in Prussia because the candidate can choose his subjects himself to a certain extent.

Finally, we have the question of salaries to discuss. Considering the length of time involved, the expense, and the exceedingly high standard of efficiency demanded from the men, one must come to the conclusion that they are not too generously paid—at least, in comparison with the elementary-school teachers. Hamburg stands highest in this regard: directors of schools with nine classes, £600 per annum; directors of schools with six classes, £450 to £550; assistant-masters, £200, rising to £450, maximum, after twenty-one years' service; teachers of handicrafts, £200 to £290.

Bavaria: directors of nine-class schools, £360 to £480 yearly; vice-principals of nine-class schools and directors of six-class schools, £300 to £420; professors in any of these schools, £240 to £360; assistant-masters, £150 to £300; teachers of gymnastics, music, or drawing, £150 to £240.

Prussia: directors of nine-class schools, £330 to £390, attained after six years' service + £45 to £90, according to the size of the town, for house-rent; directors of six-class schools, £270 to £390, attained after twelve years' service + same allowance as above; teachers, Grade I., £135 to £360; Grade II., £105 to £225.

Saxony: directors (no distinction made), £330 to £425 + house; teachers, £180 to £360 + allowance for house; teachers of handicrafts, £120 to £240.[1]

As a rule, directors teach for about six hours in the week, and the remaining professors and masters from sixteen to twenty. In all cases where a man is called upon to assist in the seminaries previously described, he is relieved of six or eight lessons in the week, but gets an extra allowance of £50 per annum (in Bavaria) for his seminary work. There must be exceedingly few directors in all Germany who do not earn extra allowances.

Seeing that all secondary-school teachers are civil servants, it is hardly necessary to add that they may be moved from one town to another. Cost of removal is borne by the State. Salaries are paid monthly and in advance. In case of death the widow or children receive the full salary or pension, as the case may be, for the three months succeeding that in which death took place. Pensions are paid to teachers in all German States. In the previous article we have seen that elementary-school teachers are called upon to contribute towards their pensions, but the present writer has not yet heard of any State where secondary-school teachers are called upon for any contribution whatever. In Bavaria the amount of pension is 35 per cent. of salary after one year's service, rising to 75 per cent. after forty years' service. Many States grant the maximum salary as a retiring allowance. Widows receive

[1] The cost of living is about 20 per cent. cheaper in Germany than in England.

40 per cent. of the pension due to the husband at death—remarriage cancels the claim—and each child under twenty-one gets a grant of 20 per cent. of the pension, which in the case of girls is continued until marriage. Besides which the orphans of teachers can always get a very considerable or an entire remission of the fees in secondary schools and in the universities.

In conclusion, by way of summary, it only remains to state that German secondary-school teachers possess the dignity of a clearly defined profession—as much respected as any other. These men are educated and trained in the most comprehensive sense of the word, and are on a ladder the highest rung of which is the Minister of Education's office—to which every one may aspire. (It is a ridiculous mistake to imagine that German "system" makes it impossible for the individual to fight his way upwards; system makes his path all the easier; but, on the other hand, English individualism, supported by snobbery, the spirit of caste and "wire-pulling," does crush individual genius and nullify personal endeavour—because there is no ladder to climb!) Furthermore, the German teacher is not left a prey to private enterprise, viz., the exploitation of scholastic agents. That is, he is not compelled to pay a tax to private individuals for the right to earn his bread. During the writer's long experience in the training of German teachers and in German schools, he has often felt ashamed to hear Germans denounce this usage as a *Schandfleck* on the English school system. Lastly, in disposing of his wares he is not compelled to descend to the methods of a cheap Jack—*Marktschreierei* it is called—of which school prospectuses and the advertisement columns of London and provincial newspapers offer so many eloquent examples.

THE EDUCATION OF THE ADOLESCENT.[1]

THE Education Act of 1870 laid the foundation of a national system of education for the children of this country. This Act, however, dealt almost entirely with the training of the young up to the age of, say, thirteen or fourteen years. The Act of 1902 has resulted in the extensive provision of facilities for secondary education for boys and girls up to the age of about sixteen. Our system of technical education provides more or less adequately for the industrial and scientific training of the more capable and ambitious workman or artisan from the age of about eighteen onwards. There yet remains an unsolved problem, the education of the great mass of adolescents, of whom, obviously, only a small proportion find their way into the secondary schools or similar institutions.

Of recent years this problem has rightly attracted the serious attention, not only of the educational world, but of the social reformer and the politician. Teachers' conferences, notably the recent annual gatherings of the National Union of Teachers and the Association of Teachers in Technical Institutions, have put forward definite proposals dealing with this question. Among these proposals are recommendations such as the following:

(*a*) The raising of the leaving age from the elementary school to fourteen or fifteen years;

(*b*) The modification of the curricula in the later years of the elementary school to include more "practical" subjects, as manual training, elementary science, &c.;

(*c*) Compulsory attendance at day or evening (preferably day) continuation schools for boys and girls between the ages of fourteen and seventeen years who are not attending secondary schools;

(*d*) The diminution in the hours of labour of adolescents; and

(*e*) The provision of "secondary-technical" schools (including trade schools), in addition to the existing types of "classical" or "literary" secondary schools.

The reports of the Poor Law Commission and the Consultative Committee of the Board of Education have succeeded in focussing public attention upon the urgent need of drastic and far-reaching changes in our educational and industrial machinery in order to cope with the serious social evils resulting from the present educational wastage caused by failure to provide adequately for the mental, physical, and industrial training of the great army of boys and girls who annually leave our elementary schools. Public opinion is now "ripe" for action by the State and the local education authorities along the general lines just indicated.

The recognition of the reality of the problem to be faced is beginning to show itself in our educational literature. Among the latest contributions to the solution of the difficulties involved are two pamphlets recently issued by the Board of Education on "The Course System in Evening Schools" and "Compulsory Continuation Schools in Germany" respectively, and a book entitled "Day and Evening Schools: their Management and Organisation," by Dr. Hayward. Needless to say, Dr. Hayward's book, like all his educational works, will be found full of suggestion and interest to all teachers. Educational literature in general is written with the child as the centre of interest. Dr. Hayward, throughout his latest book, emphasises the importance of regarding the adolescent as the present most important factor in education. In the preface he says:

> The great practical problem of the next two or three decades will be the problem of how to educate and train and provide for the adolescents. . . . Great changes will certainly be made before many years in this department of educational work. . . . By studying first the psychology of adolescence, the teacher will not only be better fitted to

[1] (1) "Day and Evening Schools: their Management and Organisation." By F. H. Hayward. The Educational Science Series. 615 pp. (Ralph, Holland.) 5*s.* net.
(2) "Compulsory Continuation Schools in Germany." Educational Pamphlets, No. 18, Board of Education. viii+75 pp. (Wyman.) 9*d.*
(3) "The Course System in Evening Schools." Educational Pamphlets, No. 19, Board of Education. ii+19 pp. (Wyman.) 3*d.*

grapple with the practical problems of the adolescent epoch, but will be better able to understand the earlier stage (childhood), and provide better for its care and education. . . . It will presently appear that adolescence is the time when the school teacher can really work wonders . . . a system of open-air games, rambles, nature-study, up to the age of twelve, with enough formal work to establish sound habits of speech, &c., followed by real "schooling" from twelve to sixteen or later, might be more effective than our present system of juvenile schooling, followed by adolescent labour.

Dr. Hayward urges, that while the elementary-school teaching will have to be "more romantic and spacious" than at present, it will also have to be "more practical at a hundred points," not only because the child's future efficiency as a citizen and wage-earner has to be considered by the school,

but also because the "practical" is the thing which sometimes appeals most to the child, and almost always appeals most to the parents, and may serve as the door of entrance for a whole series of interests, "romantic" and other.

With regard to the present-day evening schools, Dr. Hayward points out that these will probably develop in a few years into half-time schools for adolescents, and in so doing will become of very great importance to the community. The suggestions offered in the book respecting evening schools relate more to the "continuation school" proper than to evening technical classes. A strong plea is made for the humanisation of the work of the evening school; *e.g.*, the teaching of the English language, social and political history, and the increased correlation of the different branches of work undertaken in these schools.

The two Board of Education pamphlets deal with specific points in the further education of the young, namely, "the course system in evening schools in Lancashire, Cheshire, and the West Riding of Yorkshire, 1907-8," and "Compulsory Continuation Schools in Germany," respectively. The first of these pamphlets is written by Mr. H. T. Holmes, an inspector in the Technological Branch of the Board of Education. The object of the report is to give a summary of the results of the introduction of the "organised course" system into evening schools, in place of the former provision of detached courses only. The "organised course" corresponds closely with the "form" in the secondary school. The "course," not the subject or class, is the unit upon which the organisation of the school is based. Generally speaking, "organised courses" are arranged involving an attendance of three nights per week. Students attending evening continuation or technical or commercial schools where these courses are in proper working order must attend one or other of the courses, only a few exceptional students being allowed to take part of a course. The "course" system has been more highly developed in the industrial districts of Lancashire and Yorkshire than in other portions of the United Kingdom. It is interesting to note that in the whole of Lancashire, including the county boroughs, the percentage of the population enrolled in the evening schools is about 3·3, and for the whole of England and Wales about 2·3.

The principal courses arranged are usually upon the following lines. After leaving the elementary school at fourteen, the boy should attend for two years at an evening continuation school.

The elementary school does not supply the minimum of knowledge required for the student to take up profitably the study of subjects such as machine and building construction, applied mechanics, cotton spinning, &c. It is the function of the continuation school to fill this gap, and at the same time to sift out those students who are unlikely to profit by the more advanced instruction given at the technical schools.

The subjects studied in these two years at the continuation school are identical in nearly all districts. They are: elementary practical mathematics, practical drawing, elementary mechanics and physics, and English composition. The syllabuses most generally followed in the districts covered by the report are those of the Union of Lancashire and Cheshire Institutes and the West Riding County Council. In the commercial courses, the subjects taken are commercial arithmetic and geography, commercial correspondence, English, and either bookkeeping or shorthand. After passing successfully through the two years' course at the continuation school the student is then drafted on to the technical school or commercial school, where similar courses covering a principal subject with suitable "cognates" have been arranged, covering three nights per week.

The system of progressive organised courses enlists the students' interest far more than the work of continuation schools or technical schools of the old type. The attendance is better, and a smaller proportion of students leave during the session. Not infrequently the introduction of the system causes a temporary diminution in the numbers, but the decrease is quickly made good. The standard and quality of the work rise, systematic homework is encouraged, and the examination results are improved. The course system "establishes an orderly succession of steps, in place of the somewhat wandering and aimless paths by which students have hitherto progressed. The students' future career within the school is marked out plainly for him, and waste of time and effort is thus reduced to a minimum." An important suggestion appears in the preface to the report.

Up to the present, the attention of local authorities and others interested in continuative education has been mainly concentrated on the provision of instruction with a definitely vocational bias, but it cannot be said that work of this kind, however good and well-organised it may become, will exhaust the possibilities, or indeed the duties, of public educational authorities towards the adolescent workers of the country. They need, and are beginning to realise that they need, as the Workers' Educational Association has shown, opportunities for the more humane studies such as history, literature, civics, economics, and the like, which may be prosecuted no less severely than technology or science, and are likely to appeal to and to influence other and equally important aspirations.

The pamphlet on "Compulsory Continuation Schools in Germany," written by Mr. H. A. Clay, an official of the Education Committee of the Southampton County Council, deals with a much wider problem. The author traces three main lines of influence, still operative in varying degrees—religious, economic, and social-political—which have been successively responsible for the creation of the different types of continuation schools in Germany. The work of the continuation schools in the early 'seventies was unsatisfactory,

chiefly owing to the fact that the teachers were elementary-school teachers, and their methods unsuited to the more advanced age of their pupils. It was not until the curriculum was remodelled and made to centre round the occupation of the pupil, and teachers appointed with special qualifications for this work, that the schools began to go forward.

During the last decade, largely through the work of Dr. Kerschensteiner, the Schulrat of Munich, the continuation schools of many States in Central and South Germany, where attendance is compulsory and universal, have modified their curricula to some extent, with a view to the realisation of a higher ideal of citizenship. Although Prussia has abstained from passing any measure of general compulsion, Essen is now the only large town in Prussia in which the compulsory continuation school does not exist. The continuation schools in Prussia are under the control of the Minister of Commerce and Industry, and they have a more definitely technical character than those in other parts of Germany. The continuation schools of Würtemberg are under the joint control of the Ministries of Education and of Trade and Industry. Certain of the continuation schools offer a general technical training, others an instruction of a highly specialised character.

In Germany, the ordinary boy of the working classes receives, during his period in the elementary school, some three years' training in drawing, cardboard, or woodwork, in order to give a bias in the direction of skilled manual labour, and to form a basis for the later work in the continuation-trade schools. Further, as the time for his leaving the day school draws near, the town authorities and his teachers show their interest in the boy's choice of a calling. Parents receive a pamphlet informing them of the various trades and employments in the district, and the prospects in each. The school authorities awaken parents to the evil of letting their children drift into irregular employment, and the schoolmaster insists upon children going repeatedly to the Labour Bureau until a suitable post has been found. In some towns the chambers of trade and commerce have "black lists" of employers who are not to be recommended. As a result, in Munich, out of 2,200 boys who left the highest class of the elementary schools in 1908, 2,150 went at once into handwork or other skilled occupation.

The occupation being entered upon, the boy will for the next two or three years attend the continuation school for four or six hours per week. If a clerk, he joins the commercial classes; if an artisan or craftsman, he joins the manual and theoretical classes arranged for his own trade. If in unskilled employment, the subjects of instruction, as at Berlin, include commercial traffic and intercourse (railways, telephone, telegraph, &c.), citizenship, hygiene, arithmetic, and German. Lessons in citizenship are an essential and obligatory part of the course of every group in the continuation schools.

The attitude of the labouring classes and the employers towards the continuation schools is described as being "broadly favourable, usually friendly, and often enthusiastic." There is a general belief in the efficacy of and the necessity for compulsory continuation schools, and the trade associations have welcomed them.

It is universally accepted that the rising generation of the commercial and industrial classes must be fully equipped in the rivalry between town and town, no less than in the competition of the nations. For particular crafts it is perhaps the only way to save them from extinction. And yet this is not the highest ground. Germany has a deep belief in *Sozialpolitik*, in far-seeing public policy for the public good. It is not only to give theoretical illumination to the practical skill of her workers that compulsion is exercised in the continuation schools, not merely to train them as efficient wage earners, but there is the ideal aim that the whole mass should be raised to a better level, that stupidity and ignorance should not mar their lives unchallenged, and that the many should be saved who might otherwise be lost.

There is a real and organic connection between, on one hand, the continuation school and even the day school, and, on the other, the trades and industries of the large German towns. In Strassburg, for instance, in Munich, in Düsseldorf, and even in Hamburg, where the continuation schools are not yet compulsory, the vigour of the schools lies in the active interest of the masters and of the trade associations. This organic entity is the central perfection which must be worked towards in England. The questions of the supply of soundly equipped teachers, of school accommodation, and of the additional burden of finance, great as they are, are secondary in vital importance and difficulty to that of compelling the attention and adherence of the employer of every type. He is the key to the problem as a whole.

After a discussion of the general organisation of the continuation schools, the report gives an account of these schools as in actual operation in certain selected towns; *e.g.*, Strassburg, Mannheim, Munich, Nuremberg, Leipzig, Berlin, Stettin, Hamburg, Essen, Düsseldorf, &c. A few minor points of interest may be noted. At Strassburg, absence from the continuation schools is punished either by sending the boy to the classes at the side of the town remotest from his nearest school or by fining parents or masters amounts varying from 20 to 150 marks, or, if unable to pay the fines levied, by imprisonment from three days to four weeks, a penalty rarely, if ever, enforced. A comparison of the numbers of the pupils attending the continuation schools

in the German towns as compared with those relating to similar schools in the Lancashire towns would be somewhat misleading, in consequence of (*a*) the larger numbers attending secondary schools in Germany, (*b*) the higher standard of work done in the German continuation-trade schools. At Mannheim, certain large business houses are desirous of replacing compulsory attendance at continuation schools, with its attendant disorganisation of the work of the office, by attendance for one year at a whole-time commercial school. The local Association of Employees and the school authorities are opposed to this. Generally, trades unions do not oppose continuation schools for fear of an increased output of skilled labour; on the contrary, in Leipzig the trade associations have themselves erected a continuation school.

The general measure of success which has attended the continuation schools in Germany naturally suggests the inquiry, Why cannot work of this type be generally adopted in the British Isles? On this point, Mr. Clay says:

> The real and organic connection existing or aimed at in Germany between the compulsory continuation school, on the one hand, and the life of the pupils who are leaving the elementary school, and on the other the trades and industries of the place, should not be less possible of attainment in this country. In the course of time, as in Germany, after an initial period of aversion and some hostility, the continuation school will be accepted as a matter of transition and growth by the pupils and their parents and by the employers. There will be apparent the advantages of longer discipline to the child population, and of completed sessions and courses of study, as against the fragmentary attendances which are now by no means the exception. It will be seen that the compulsory classes will be the constant source of supply of adult skilled workers, who will voluntarily seek advanced instruction in the technical colleges. Something will at last have been done to mould and train the great mass of youthful unskilled labour, which, necessary as it is to the community, needs and deserves the most careful forethought of the State. Perhaps even in their case it will be possible to arrive at some kind of contract for definite periods of employment. But whatever is done by the local authority and by the State, the employer is the arbiter of its success—he is the guardian and trustee for the future generation of workers.

GEOGRAPHICAL BOOKS FOR THE SCHOOL LIBRARY.[1]

By B. C. Wallis, B.Sc., F.C.P.

THE schoolboy or schoolgirl receives from sources outside the school life traditional views about life in other lands; and these views are in all probability incorrect in some degree in relation to national characteristics or habits or outlook on life. Hence the value for the school library of the first book (1). Miss Stopes presents the reader with her diary as written on the spot and immediately after the occurrence of the events she describes. The author went to Japan to do scientific work, but very little of this finds a place in her journal, which is a bright and entertaining account of some sixteen months or so in Japan. There are the days of life in Tokio, while she was at work at the Institute, the account of the rainstorms, the floods in the city, typical life in a Japanese house, and mingled with all this the influence of the West upon things Japanese. In addition are the stories of the journeys into the interior, among the islands to visit the coal-mines, in which she was specially interested, and in this connection is given an account of life among those Japanese who are but slightly influenced by the customs and the manners of the West. Travel by railway, by road, and on foot, the customs one meets at the out-of-the-way inns, are all described in a manner which makes them real. The illustrations are few but good.

The handbook to Labrador (2) should be in every school library. Whether it be regarded as a record of the results of much self-sacrificing endeavour or as a first-hand account of the geography of a region, few would dispute its claim to be regarded as a valuable book for elder pupils. To British children, so thorough and complete a record of a land roughly in our own latitudes, but handicapped by disadvantages of soil, climate, and situation, must necessarily be valuable as provision of a contrast with the conditions of life at home. For specific purposes this book contains data from which a child might be asked to investigate such problems as (i) the fisheries of the North-West Atlantic; (ii) the means of communication between Labrador and Canada, the United States and Europe; (iii) the conditions of life in the tundra; (iv) the work of missions from the point of view of civilisation; (v) the effect of the glacial age upon the soils and surface forms of Labrador. These are only a few of the problems which the teacher of geography could set his pupils.

Dr. Grenfell writes well as to the fisheries, the coast peoples, missions, dogs, and the experimental work with reindeer. Specialists deal with the geology, the Indians, the Hamilton River and the Grand Falls, the birds and the flora. There are maps and many illustrations.

Many teachers of geography make use in connection with the work on the British Empire of the various publications of the railway authorities and the Colonial Governments with regard to emigration to, and life in, the respective farm lands of the Empire. These publications can be regarded to some degree as sources of first-hand information, and as such are valuable. At the same time it is advisable to provide for the use of the pupil valid information which serves to modify and correct impressions received from these necessarily partisan documents. For this purpose Miss Binnie-Clark's book on the Canadian Prairie (3)

[1] (1) "A Journal from Japan." By Marie C. Stopes. (Blackie.) 7*s.* 6*d.* net.
(2) "Labrador: the Country and the People." By W. T. Grenfell and others. (New York: The Macmillan Co.) 10*s.* net.
(3) "A Summer on the Canadian Prairie." By G. Binnie-Clark. (Edward Arnold.) 6*s.*
(4) "New Zealand in Evolution." By Guy H. Scholefield. (T. Fisher Unwin.) 10*s.* 6*d.* net.
(5) "In the Canaries with a Camera." By Margaret d'Este. (Methuen.) 7*s.* 6*d.* net.
(6) "Leaves from an Afghan Scrap-book." By Ernest and Annie Thornton. (John Murray.)
(7) "Britain Across the Seas: Africa." By Sir Harry Johnston. (National Society's Depository.) 10*s.* 6*d.* net.

may be added to the library. In order to secure the attention of the pupil upon the purely geographical facts it will, perhaps, be advisable to suggest that the first five chapters should be read after the rest of the book. The narrative deals with the settlers' early life on a tract of virgin land; it pictures the somewhat vain efforts of two Englishmen, who lacked experience, to turn their holding to profitable use; it shows the almost entire dependence of the newcomer upon the railway service, and on the whole is a warning as to the kind of people who should *not* go to virgin land in the Colonies.

In justice to the Colonial Governments the writer emphasises the statements made by them that not only is land available, but that the *man* is equally essential, and this point is made more marked by the contrast between the two Englishmen and the Scottish crofter and the Hungarian, both of whom are making a successful struggle against the difficulties of their situation. Certain aspects of Canadian life in Winnipeg and on the farms are presented with a strong air of reality, and thus the book is valuable from this point of view as well as an antidote to mistaken notions obtained from other sources.

The fourth work is of interest as it is on the border-line between geography and political science. For purely geographical purposes the numerous and excellent illustrations will serve to give some idea of the conditions of life in New Zealand, while separate chapters deal with the population, the forests, the native flax, the "wool kings," gold-mining, coal and other minerals, the frozen meat industry, the "wealth of the cow." These chapters and a later one on shipping and trade constitute about half of the book, and provide information and ideas which are essentially geographical, although the author does not present them from that point of view. To take but one instance, the author writes: "To say that every householder in New Zealand is within reach of coal of first-class quality is no exaggeration of the fact"; and in connection with this question of the widespread distribution of coal, he refers to the deposits on the western side of the southern Alps and the slopes of these mountains close to the sea. The nearness of the mountains to the shore is suggested by the facts that the harbours are difficult of access, and that in no case is any force other than gravity necessary to take the coal down to the shore from the mine head. The growth of the coal-mining industry is evidenced by the facts that the discovery of the freezing process made steamships necessary for the transport of mutton, and these ships required bunker coal on the spot, and by the growth of the local railways which use home-mined coal, and further by the fact that the "British Admiralty has been a constant user of New Zealand coal, both on the Australian Station and as far abroad as Singapore on the China Station. For some years specially constructed Admiralty colliers ran regularly from Westport to Hong-kong and Wei-hai-wei."

It will be obvious that a book of this character can only be used for pupils in the upper forms, but it can be recommended safely for their use, especially where there is any tendency in the rest of the curriculum towards economic or political science. In some cases it would perhaps be advisable if the pupils were encouraged to read only stated chapters, or if they were set definite problems to elucidate from the data supplied by this book.

Well provided with small sketch-maps and many interesting photographs, the account of a winter spent in the Canaries (5) should find a welcome place in the libraries of secondary schools, especially those for girls. The writer gives a picture of the physical features, the life of the natives, the local industries, the environment of volcanic islands, which must inevitably fasten itself in its more important characteristics upon the mind of the reader. The banana industry in relation to the English market, the price of sugar kept up to 6*d.* a lb. for the benefit of the home-grown article by means of a tax upon the sugar imported from Cuba, the trade in cochineal which still slightly survives as a relic from the palmy days which preceded the skilled produce of the German chemist, the pictures of German tourists in addition to the English visitors, all emphasise some aspect of the islands which has geographical importance: they serve as illustrations from a first-hand record of the geographical facts read in the school text-book.

Volcanic conditions must always have a special interest, and the accounts and photographs of the three craters set in the tops of the islands which rise steep-sided from the open ocean cannot fail to interest even the pupil who feels that geography inspires him but slightly. The unforced thoroughness of the picture which the author presents will react on some minds to make them wish to visit the Canaries, while upon other minds it will leave so great an impression of familiarity with the scenes depicted as to make them imagine they have already been there.

The sixth book contains the experiences of an English official and his wife at Kabul. Mr. Thornton was twice engaged to erect and control a tannery and later a boot factory at Kabul; the work was first undertaken for the late Amir, and recommenced for the present Amir. The reader is presented with an account of the journeys between Kabul and Peshawar, the life and work at the tannery, the difficulties placed in the way of the Englishman by the native officials, the difficulties of transport of machinery and supplies in a country without railways. There are side pictures of the Amir's life, the existence of the poor, the capabilities of the country, life in the royal harem; and there are some excellent illustrations, notably a view of the way through the Khyber Pass. The incidental details go to furnish an atmosphere to the book which provides the scholar with a suitable incentive to study—if he has not already done this—the relief, the climate, and the vegetation of Afghanistan as recorded in his maps and text-books. He realises the particular forms of human

existence under an Eastern despot, and should turn to the story of life in India with a new power of comprehending the greatness of the work of the comparative handful of Englishmen who "run" that great country.

From this account of life in a foreign land one turns with a feeling of revived interest in the story of the work of Britons in Africa. Sir Harry Johnston's account of British Africa (7) is both geographical and historical: the geographical aspect is supplied by many excellent illustrations, and by his accounts of the discovery and opening up of Africa, and of the indigenous races. The second chapter, on "Pepper, Slaves and Gold," would be alone sufficient justification for the inclusion of this book in a school library. Teachers and scholars will find an attempt to arrive at a carefully balanced account of the work of white men in the Dark Continent, and will feel that this book aims at presenting a truthful interpretation of the development of British Africa. The stages of the process whereby there has come to be a United British South Africa with a German colony on the west fringing the best harbour on the west coast—Walfish Bay—and a Portuguese colony on the east in possession of the best harbour for many miles on the east coast, are portrayed so as to evoke a continuously increasing interest. The "Cape to Cairo" ideal falls here into correct proportion with developments to the north and to the south and to the east: the potent civilising influence of railways is gradually enforced. There are many illustrations and maps, and the work has been produced so as to give these in the best way.

The book almost forces the conclusion that no pupil in the upper forms should leave his study of African geography and African history without reading this account, which summarises the whole development and places this growth, so far as is possible, into true historical perspective.

INTERNATIONAL HEALTH AND TRAINING.

THE fourth annual report of the National League for Physical Education and Improvement, that for 1909, is a record of much good work done unobtrusively, but at the cost of considerable time and labour. The most striking result of its work is contained in a special report on physical education in foreign countries,[1] including the United States of America, with contributions in each case from the leading experts on the subject. The replies which were received in answer to the several questions circulated by the Joint Committee on Physical Education (organised by the League) have been abstracted and arranged in the form of a chart, in which the main details appear under the head of the respective countries. The information is thus presented in a form easy of reference, and its intrinsic value is enhanced by the facility with which comparisons may be instituted. Moreover, if successive reports of this character become available at regular intervals of a few years, the rate and the nature of the progress made in the different countries will be readily ascertainable.

As matters stand at present, the report indicates that physical education, mainly gymnastic, is, or is about to become, obligatory in the schools of most countries. The system adopted is, in almost every case, either the German "Turnen" invented by Jahn and Eiselen early in the last century, or the Swedish system which was originated by P. H. Ling in Sweden about the same date, and which commonly bears his name. In many cases games are recommended; they are seldom obligatory, and have been introduced in a few instances only. The time allotted to physical education varies from two to six lessons per week; and the duration of each lesson varies from twenty to sixty minutes. Except in the Scandinavian countries, medical inspection as a preliminary to physical exercises is the exception rather than the rule. In the lower grade schools the subject is usually taken by the ordinary teacher, but by special gymnastic instructors in the higher schools.

The training of the gymnastic instructor varies considerably, both as to its duration and its thoroughness. It is most complete in Sweden and in those countries in which a similar system has been adopted. In Belgium its importance has been specially—and rightly—recognised, by incorporating it with the Medical Faculty in the University of Ghent. The period of study varies within wide limits—from a few months to three or four years, in different cases; and the curriculum includes anatomy, physiology, hygiene, and allied important subjects. The status of the gymnastic instructor is as yet somewhat below that of the ordinary class-teacher as a rule.

A study of this report lends colour to certain resolutions which were unanimously adopted at the last meeting of the Joint Committee. The first welcomed the syllabus recently issued by the Board of Education for the development of physical education in elementary schools; and suggested that a further syllabus, *mutatis mutandis*, should be extended to the secondary schools of the kingdom. In the third resolution it is stated that the committee "feels strongly the importance of inculcating the teaching of civics in the educational system, and in particular recommends the institution, outside the school curriculum, of scouting, rifle clubs, and other expedients for training the young in the defence of their country." The obvious, common-sense patriotism of this pronouncement may be allowed to palliate the use of a word the convenience of which scarcely reconciles us to its repellent form.

The International Council of Women, under the presidency of the Countess of Aberdeen, concerns itself especially with the health and the care of the mothers and children, the women-workers, and the schools of the civilised world. Incidentally, its report[1] bears testimony to the spread of the

[1] Issued to the public at 6*d.* per copy, post free.

[1] "The Health of the Nations." (Constable.) 1*s.* net.

hygienic gospel, in the general record of a lowered rate of infant mortality, in which respect, however, Italy appears to show especial need for enlightenment. The statements contributed from the various countries with regard to school hygiene are for the most part rather scanty and general in character, although practically all agree in recording continuous improvement. From Tasmania comes the significant suggestion, anent the effect of medical inspection upon the pupils themselves, that "the education of children in these matters is likely to prove an important factor in securing popular acceptance of public health measures in after years." This consideration is of all the more moment when we consider the rapidly increasing weight which the industrial population can throw into the legislative scale. In regard to the "teaching" of hygiene to young children in elementary schools, the clear logic of the Frenchwoman sounds a note which transcends every syllabus of oral instruction: "Dans les écoles primaires la pratique l'emporte de beaucoup sur la théorie. Les écoliers . . . reçoivent soit en commun, soit en particulier, des conseils sur l'alimentation, le vêtement, la tenue du corps et les habits." Due praise is accorded to the advanced position of school hygiene in the Scandinavian countries, and especially to the magnificent school buildings of Stockholm, with their spacious and well-ventilated rooms and their excellent sanitation. But one reads with some surprise the statement that "The care for the health of school children shows no features peculiar to Germany"; and, indeed, this rather sweeping assertion is to some extent modified by subsequent references to certain departments of school hygiene which can scarcely be termed of small importance.

The pioneer work which has been begun in Egypt, in connection with the Minia Free Dispensary, is seriously hampered both by financial obstacles and the extreme difficulty of obtaining suitable teachers and nurses. Any "Nakima" with a three years' general training can, we are told, command £30 per month or more. "There are perhaps three who have had the general experience necessary for the responsible post of matron of a dispensary, but any one of them would require a salary of at least £50 a month."

PERSONAL PARAGRAPHS.

MRS. HENRY SIDGWICK, like her husband, may justly be called one of the pioneers of higher education for women. Latin and Greek are by no means rare studies among modern girls, but at the time she was acquiring those languages along with her brother, Mr. Arthur Balfour, they were rare enough to make her a sort of modern analogue of Lady Jane Grey. She has ruled Newnham College for twenty years save one, and will be succeeded in January next by Miss Katharine Stephen, daughter of the late Sir James Fitzjames Stephen. It is understood, however, that she will still be connected with the college as its treasurer and a member of the council, and be associated with the work of the Board of Education and the educational work of the Cambridgeshire County Council.

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AT the Wycombe Abbey School speech-day, Miss Dove, who has been headmistress for fourteen years, received on her retirement a handsome gift from the seniors and pupils, and a presentation from the council of the school.

* * *

CANON A. J. GALPIN, who has been very successful at King's School, Canterbury, and resigns, we believe, largely owing to domestic reasons, will become rector of Saltwood, Hythe, in September. He was for nine years a master at Marlborough College, during which time Onlooker had experience of his urbanity and readiness to do a younger man a service. He will be succeeded by the Rev. C. R. L. McDowell, who was a scholar of Exeter, Oxford, took first classes in classical "Mods" (1893) and Lit. Hum. (1895), and was an assistant-master at Wellington College from 1896 to 1902. Since then he has been an assistant-master at Eton.

* * *

THE appointment of the Rev. William Temple to the headmastership of Repton School has caused—and quite naturally—deep searchings of heart among assistant- and even headmasters in secondary schools. Positively, his qualifications would appear to be that he is the son of an Archbishop, was an exhibitioner of Balliol, took first classes in classical "Mods" and Lit. Hum., and has been a fellow and lecturer of Queen's College. Negatively, however, he shows up very badly. So far as appears, Mr. Temple has not to his credit one single term of teaching in a secondary school. It is not easy to believe that in any but very exceptional cases a headmaster is made by anything less than ten years' service, ten years of "the burden and heat." If Mr. Temple's case is a very exceptional one, it would be only just to the profession as a whole that his unique merits should be clearly stated. As things are, his appointment is a grave slight to the hundreds of efficient men who are thoroughly qualified, and have also possibly "shown an interest in missions and also in social matters." The action of the governors of Repton School is a serious set-back to the causes of training and registration of teachers, and generally an injustice to that hard-working, conscientious, and ill-remunerated section of the community which works as assistant-masters in secondary schools.

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IT is something to be grateful for that some of the smaller and less well-paid headmasterships, at any rate, are allowed to fall to men of experience. Such a man is Mr. Herbert Lionel Rogers, who has been elected to King's College School, Wimbledon. He was a scholar of Christ Church, Oxford, took a first in "Mods" (1892) and a second in Lit. Hum. (1894), and has

had teaching experience at St. John's, Leatherhead, Lancing College, and Radley College, where he is sixth-form master.

* * *

The Right Hon. Charles Stuart Parker, who died recently in London, left an emphatic impress on education. He was educated at Eton, and was a scholar and fellow of University College, Oxford, in the days of Stanley, Conington, and Goldwin Smith. He served on the Great Public Schools Commission, the Scottish Endowed Schools Commission, and the Select Committee on Scottish Education. He was keenly interested in the education of women, and was, besides, a pioneer in the work of the Oxford University Volunteer Corps, of which he was major for many years. What more natural, therefore, than that he should sit on the Commission on Military Education?

* * *

Onlooker has lost a friend in Dr. F. J. Furnivall, with whom he was brought into contact some years ago in connection both with English literature and rowing. Dr. Furnivall's cheery manner and venerable appearance made him an interesting feature at the British Museum Reading-room. He exercised a wide and stimulating influence in many directions, whether in connection with social movements or the many literary societies which he helped to found. He was a most sympathetic helper of young people. A very full obituary notice of him was published by the *Times* on July 4th. Onlooker.

ENGLISH LITERATURE.

Few thoughts can be more stimulating to an Englishman's pride in his national literature than the thought of the many different regions of the world in which fruitful research into the history and origins of that literature is being prosecuted to-day. The labour of students at home is reinforced, and often put to shame, by the industry of scholars in France, Germany, and America; and of late Australia has begun to add her contributions to the rest. Prof. M. W. MacCallum's "Shakespeare's Roman Plays and their Background," [1] which comes from the University of Sydney and has been rendered possible in part (as its author tells us) by the splendid library bequeathed to New South Wales by the late D. S. Mitchell, is a notable offering of this kind—a book of solid and helpful learning and genuine interest. The introduction, besides sketching the previous treatment of Roman subjects in French and English plays, includes three studies of Shakespeare's literary "ancestors," Plutarch, Amyot, and North. The chapter on Plutarch, with its numerous quotations from Elizabethan versions, is both charming in itself and thoroughly relevant as bringing out the aspects that fascinated Montaigne and Shakespeare. As for Amyot, Prof. MacCallum gives reasons for believing that he translated from the Greek, and not, as has sometimes been asserted, from the Latin; so that in using North, who translated from Amyot, Shakespeare was at two, not three, removes from the original. The bulk of the book is an examination of the three Roman plays and their relation to their ancestry. Briefly, the result is this. "Antony and Cleopatra" adheres most closely to the biography, but the words, phrases, and constructions are mostly Shakespeare's own: there is "a maximum of Plutarch and a minimum of North." "Coriolanus" presents "the maximum of North with the minimum of Plutarch"; and in "Julius Caesar" we have "the mean influence both of Plutarch and of North."

Prof. MacCallum is also jointly responsible with a colleague at the University of Sydney for a selection of "English Narrative Poems," [1] which would provide material for an attractive school course of English poetry. The aim of the book is to "illustrate special aspects of the genius of certain typical poets and certain successive phases of English literature." The selections begin with "Cambell and Triamond" from "The Faerie Queene" and "Raphael's Story of the Fall of the Angels" from "Paradise Lost," and they come down to "The Proud King" from "The Earthly Paradise" and "The Death of Cuchulain" by Mr. W. B. Yeats. Besides more familiar pieces, there are some refreshingly unhackneyed extracts—Parnell's "Hermit" (the name is well known, but how many of the present generation have read the poem?), Blake's "Book of Thel," a story from Southey's "Thalaba," and "The Espousals of Polyxena," from W. S. Landor. The only drawback to an admirable book is the price, which is somewhat high for a "plain text."

GREEK LITERARY COMPOSITION.[2]

We have often had occasion to thank Dr. Rhys Roberts for his books on literary criticism; and we think the present volume as valuable as any of the others. It is of a different type, concerned not with what we call literary appreciation, like the treatise on the Sublime, but with the technicalities of composition, sound, rhythm, and arrangement. It is well to insist on the importance of these things. At the present day writers too often, we may say generally, neglect sound; they compose for the eye, not for tongue and ear: to use a phrase often heard, they are anxious how their words "look upon the page." The present writer has the habit of testing all literary work by reading it aloud, at least in part, at least those parts which please or displease. If other readers had the same habit, less bad poetry would be popular. Certain translations we might name in particular, in which the errors are so bad that they are really not readable. We hope Dionysius may fall into their hands.

[1] "Shakespeare's Roman Plays and their Background." By Prof. M. W. MacCallum. xv+660 pp. (Macmillan.) 10s. net.

[1] "English Narrative Poems from the Renaissance." Selected and edited by M. W. MacCallum and E. R. Holme. viii+359 pp. (Blackie.) 5s.

[2] "Dionysius of Halicarnassus on Literary Composition." The Greek Text, with Introduction, Translation, Notes, Glossary, and Appendices by W. Rhys Roberts. xiv+358 pp. (Macmillan.) 10s. net.

For the classical student, and even more for the teacher of composition at school or university, this book ought to be invaluable. Here he may learn how the Greek language sounded to a Greek; how careful the Greek was in the matter of euphony, weighing every vowel and testing every consonant; how sensitive he was in the matter of accent. We all know the story of the weasel emerging from the waves: here we have the means of testing and explaining that story. If anyone doubts that the Greek accent was a musical pitch, he must give the lie to Dionysius, who clearly says that it was, and that its interval was not more than a fifth. The chapter on accent suggests many trains of thought. We hope it may help those who are now attempting to reproduce it in teaching and learning.

Still more important are the sections on order. By a series of examples, the author shows how the same words may be noble or trivial in different arrangements. The only matter of importance which seems to be omitted is the question of phrasing, to use the word in its musical sense. It is one of the hardest things to teach a pupil that the phrasing must disclose the meaning bit by bit, each bit being so far intelligible, and giving the right impression as far as it goes, the whole meaning becoming clear only at the end. Do we not all know how apt the composer is to point to some word that is coming, when asked to explain a dubious phrase? How he regards his work as a jig-saw puzzle? *Aio te Aeacida Romanos vincere posse* properly meant what the hearer thought it did mean, and to make *Romanos* the subject was a trick of deceit which puts the oracle on the level of a modern politician with his terminological inexactitudes. It could only mean this if the Romans as conquerors had been already in mind.

The editor's part of this book, as usual, is well done. His notes and glossary are excellent, his translations good if a little heavy. The verse translations are unfortunately inferior. We have remarked a number of passages where we might differ from Mr. Roberts, but it would serve no good purpose to recount them here: our wish is to direct attention to the first-rate importance of the subject-matter, beside which details are unimportant. We cordially recommend the book to the attention of all scholars.

PROGRESS IN SECONDARY EDUCATION DURING THE YEAR.

MR. RUNCIMAN, in introducing the Board of Education estimates in the House of Commons on July 13th, made a statement on the working of the Board during the year. The services of the Board now cover not only 20,000 elementary schools, but many hundreds of secondary schools, technical schools and technical classes, schools of art, museums, cookery centres, rural and agricultural classes, medical inspection, physical training, some sides of university work, training colleges, and many other departments of educational machinery.

Dealing with secondary education, the President of the Board said one of the best signs of the times has been in the spread of secondary schools. This year our secondary school grants reach the sum of £610,000. There are 950 schools (a rise of more than 100 in two years); there are 10,000 teachers in those schools, and their qualifications are better than they were. There are 158,000 pupils at present in attendance, and more than 50,000 of these are free ex-elementary-school pupils, of whom 15,000 have entered under the regulation during the present year. This is a great improvement in range over the state of things four or five years ago. One of the most marked improvements has been in the length of the school life. Sir William Anson last year directed attention to the shortness of the school life in one of our great municipalities where the secondary schools were really more of the nature of higher elementary schools, very largely because the pupils did not stay long enough at the schools. He directed especial attention to the state of the Bradford school. Bradford has now turned over a new leaf, and all the influence that could be brought to bear has been exerted, both on parents and pupils, to increase the length of time that the pupils spend in those schools. We have had to use very much the same kind of pressure in other instances. We have warned thirty-five schools that the length of time their pupils attend in the schools is too short, and that we shall remove them from the grant-list unless they are prepared to reach a reasonable standard. The governors all over the country appear to be co-operating with us in that object. In many schools, also, they are requiring undertakings from the scholars that they will stay out the full time of their secondary-school career. Furthermore, they are remodelling their scholarship schemes in such a way as to get the children earlier into the secondary schools, and discouraging the very bad system of what is known as a "year's finishing," which really is throwing away the time that is spent in the secondary school.

Then there has been a great improvement in the elasticity of the curriculum of these schools. The limits must of necessity be generous, the curricula not be unduly specialised, and they must not be defective in essentials. But within those limits we are prepared to encourage differentiation of type, and we have been doing so as far as we possibly can.

The Board encourages experiments, and is very glad to have any new experiments brought to its notice. We are likely to publish very shortly the reports on two experiments of great value. One is a new method of teaching Latin. Another is a method of organising school holidays of town children under conditions of home life, including the study of botany, geology, and literary associations in country districts. This is not aided by any grant at the present time, but we are watching the experiment with care, and if we can give money we shall do it. Then there has been an increase in the interchange of teachers from abroad. During the past year twenty-two schools have taken advantage of the arrangements made with the French and Prussian Governments to send over teachers here in exchange for teachers whom we offer to France and Germany. I believe there will be more next year. All this goes towards broadening the interest in the teaching in those schools.

Then there has been greater co-operation with the associations of specialists, like the English Association, the Mathematical Association, and the Historical Association.

A comparatively new development of great moment is the association with the governing of these schools of the old boys and old girls who have passed through them. That not only provides the governing body with some means of getting into touch with the actual experience of the district,

but it strengthens the local interest that ought to be taken in all secondary schools throughout the country.

The spread of this system has, however, not been altogether without its dangers. There has been too great a desire for quantity at the expense of quality, and many schools which are mainly elementary have been trying to get on to the secondary grant-list without raising their standard to the secondary level. Then there has been too much jealousy between the elementary- and secondary-school pupils who are connected with those schools. Their interests are not antagonistic, and ought not to be antagonistic. Then, I think, there has been in the curriculum a tendency to far too much over-theorising.

Every now and again the educational world has some favourite idol. Two years ago the cry was all for scientific education; now we hear about nothing but practical education. Nothing will receive our approval in the secondary schools which does not provide for a well-balanced curriculum. The teaching of a large number of subjects ineffectively we wish to avoid.

Then there is undoubtedly great restlessness with regard to the curriculum of these schools. No sooner is a new educational scheme started than somebody wishes to pull up the plant to see how it is getting on. If we took one quarter of the advice tendered to us we should have to remodel our regulations once a year. So far I have not altered the regulations at all during the current year, and the same applies to the elementary schools, and for the first time in the history of education there is no new Code this year.

Under this heading I should like to refer to the position of headmasters in secondary schools. In many places the headmasters of secondary schools are far too much under the control of officials. If there is one thing more than another in the organisation of education which seems to be a serious danger, it is the over-control of the officials. In secondary schools this is particularly harmful. A headmaster ought to be consulted properly in the management of his school; he should have immediate access to the governing body; the appointment and dismissal of assistants ought never to take place without consultation with him; and the governing bodies should act only after full consideration with the headmaster, who, indeed, ought to be the responsible executive officer through whom, and after consultation with whom, the responsible authority acts.

I do not believe for a moment that this undermines popular control. I believe it is very much better than bureaucratic control, and I invite the governing bodies of these secondary schools all over the country to get into close touch with the headmasters of their schools. If this method of direct communication between the headmasters and their governing bodies, without the former having to be under the thumb of a secretary or director, is not conceded—or is not demanded by the local authorities themselves—it will mean that the men of calibre, education, and wide experience will be driven away from these secondary schools, and I think that would be most lamentable.

I should like to direct attention to the development of the secondary-school system in Wales. This year marks the opening of new buildings of the University College of South Wales and Monmouthshire in Cardiff, the erection of the magnificent pile of buildings for the sister college for North Wales at Bangor, the beginning of the erection of permanent buildings for the National Library of Wales at Aberystwyth, and the decision to erect two new training colleges at Barry and Caerleon—a very fine achievement for a small Principality in the course of a single year.

THE VALUE OF CHARACTER.

Lord Selborne visited Winchester College on July 9th last, on the occasion of Founder's Day, for the first time as a Fellow of the College. He was welcomed "Ad Portas," and in the course of his reply to the speech of the Prefect of Chapel he made the following remarks:

I wish to say a word to those who are going to be the future workers for the King and Empire. I say workers, because there are too many loafers in England, and Winchester is not going to turn out loafers. Between the rich man who does nothing but amuse himself and the tramp there is really no moral distinction. The only difference that I know is that one is presumably clean and the other is certainly dirty.

All work falls under two divisions, the work of thinking and the work of thinking and doing. All my experience has been with the latter class. What is the kind of man I want to help me in my work? It is not easy to find suitable men. The Empire is strewn with the wrecks of scholars and athletes who lack something which is far more important than Greek iambics and cricket. When I want a man to help me I do not ask in the first place what class he got or what his intellect is, still less do I ask whether he was in Lord's.

The question I ask is, Can I trust him? That is a short sentence, but it comprises a great deal. Can I trust him to obey my orders? A man you cannot trust to obey is a nuisance to be eliminated at the first opportunity. Can I trust him to command? The man who cannot command is a broken reed. Can I trust him to rely upon himself and not to come to other people for support or advice in an emergency? The man who cannot rely upon himself will never be fit for anything but an inferior position. Can I trust him to give me the whole of his strength in the work entrusted to him? If not, he is playing me false. Can I trust him not to think of himself? There is no greater nuisance in the world than the man who is always asking himself, "How does this affect me?" or "Have I been sufficiently considered?" He is a creature who has lost all perspective, and he never sees things in their true proportion, because his own miserable self is always dwarfing the landscape. Can I trust him to be straight? There is no use in the best intellect or the best education if a man is an intriguer or if you cannot rely upon his word.

Now if I find that a man answers to these tests, then I go on to inquire about his intellect and his education and his physical qualifications.

Why do I mention these things here to-day? I tell you why perfectly frankly. Because I think there is a permanent danger at all public schools of some boys with very valuable qualifications passing comparatively unnoticed by both dons and men, and even sometimes earning disapproval, because of what are considered to be their eccentricities. We always talk of public schools as great moulders of character. So they are. The danger is not that they should not mould enough but lest they should mould too much. A public school wants to train up leaders as well as lieutenants. Public opinion at a public school is a tremendously powerful influence. But it moulds too much sometimes.

Independence of character and defiance of public opinion are in themselves good things. I mean that, and do not mean that defiance of public opinion or independence of character which arises from obstinacy or sullenness of temperament. These are vicious follies. But I mean that independence of character and defiance of public opinion which come from the reasonable use of the intelligence,

when a man's intelligence inspires him to defy a common rule of observance because he does not think his intelligence ought to be subjected to that compliance, and because he prefers the self-respect of the exercise of his intelligence to the quiet life of comfort and compliance.

Courage is a very great quality. When we talk of courage we do not mean physical courage. The courage of the soldier on the battlefield is a very great quality, but it is of very little importance or value compared to moral courage. Moral courage is the greatest of all qualities in this world: the courage which enables a man if he thinks the case sufficiently good (and of course his judgment must be equally balanced) to defy public opinion and to take his own line. I am not now talking of moral questions. Of course, what I say is true over and over again of moral questions; but I am talking of the exercise of reason and of intelligence in the affairs of life. You never get a leader of men worth having who did not as a boy defy public opinion; and it was because he learnt to defy public opinion wisely and at the right time that afterwards he was not a follower but a leader of men.

Nobody will have followers unless he goes first and shows himself to be the leader. When you get the characteristics I have mentioned in combination with a great intellect and a first-class education, then you get your great instrument for moving the world; when, in addition to that, your man is an athlete, then you get your paragon; but of these three—muscle, brains, and character—believe me by far the greatest is character.

TEMPERATURE OF THE UPPER ATMOSPHERE.[1]

THE most important meteorological element of which observations can be made in the free atmosphere is temperature. Observations of pressure furnish practically the only means of estimating heights, and they cannot therefore be used to determine directly the distribution of pressure. The latter can only be determined indirectly by calculation from the observations of temperature and the pressure at the surface. Thus, while dynamical meteorology must necessarily be based on a knowledge of the pressure and density distributions, it rests ultimately on the distribution of temperature, and in a lesser degree on that of humidity, in the free atmosphere. The calculations are obviously laborious even when sufficient observations are obtained; the difficulty and expense of obtaining the observations make the task appear almost hopeless. Thus no really serious attempt has been made to calculate from observational data the actual synchronous distribution of pressure in the upper atmosphere at 5–10 km. altitude at times when the surface distribution is meteorologically most interesting. Our knowledge is confined practically to mean values.

In order to avoid as far as possible negative quantities and to facilitate calculation and comparison, temperatures have been usually expressed in degrees C. above the absolute zero—273° C. on the ordinary scale. Atmospheric temperatures in temperate latitudes lie almost invariably between 200° and 300° on this scale, and the initial 2 may be generally omitted without risk of confusion. The letter A is used in connection with this scale; thus (2)73° A is 0° C. Further, the vertical gradient of temperature is expressed in degrees C. per kilometre, and is reckoned positive when temperature diminishes with increasing height.

The most complete contribution hitherto made to the discussion of upper air observations is that of Von Bezold, Assmann, Berson, and Süring, who dealt with the observations obtained from manned balloons. The following table gives the values they found for the gradient of temperature for each kilometre up to 9 km.:

Height	0–1	1–2	2–3	3–4	4–5	5–6	6–7	7–8	8–9 km.
Gradient	5·0	5·0	5·4	5·3	6·4	6·9	6·6	7·2	9·0
Number of Cases	59	57	42	38	23	13	5	5	2
Probable Error in Gradient ...	—	—	—	—	0·1	0·3	0·5	0·6	—

In the surface layer the gradient is affected by the inversions, *i.e.*, exceptional cases where the temperature increases with the height. Such cases occur most frequently in winter, and as the number of winter ascents in the series was considerably less than that for other seasons, the actual mean annual gradient in the lower layer is less than that deduced from these results. The values of the gradient for the first two layers when cases of inversion are excluded are 6·4, 5·4, respectively.

The following values have been deduced from the later manned balloon observations, 1901–7:

Height	0–1	1–2	2–3	3–4	4–5	5–6	6–7	7–8	8–9	9–10 km.
Gradient	4·3	5·1	5·1	5·8	6·2	6·9	7·5	6·2	3·7	8·3
Number of Cases	50	50	44	40	34	22	10	3	1	1
Probable Error in Gradient	—	—	0·2	0·2	0·2	0·2	0·4	0·6	—	—

The feature to which Berson directed particular attention was the comparative constancy of the gradient up to a height of 4 km. and the very considerable increase in its value in the next layer. The more recent observations do not show the peculiarity so markedly, and indicate a lower level for the discontinuity. Berson attributed the change to the fact that the upper limit of the lower clouds is nearly at 4 km. altitude, and near this height inversions are more frequent than in the layer above and below it. From actual observations in the clouds themselves he deduced that the gradient there agreed remarkably well with the theoretical gradient for saturated air rising adiabatically, which we may call g_s. Just beneath the upper limit of the cloud an increase in the gradient was usually observed, and just above the upper limit the gradient vanished, and the air immediately above the cloud was generally found to be warmer than that beneath its upper surface. It may be noted that the value of g_s between 5 and 7 km. is approximately 7° C. per km., agreeing closely with the value found for this region. The mean values for the gradient for each 500 m. up to 3,000 m., deduced from the monthly mean temperatures found from the kite and kite-balloon ascents made at Berlin and Lindenberg, 1903–7, are as follows:

Height	0–0·5	0·5–1·0	1·0–1·5	1·5–2·0	2·0–2·5	2·5–3·0
Gradient	5·5	4·6	4·4	4·8	4·0	5·0

These values differ considerably from the corresponding values for the manned balloon ascents. This may be due to the fact that the kite ascents are distributed throughout the year, and are made under a greater variety of weather conditions. The large surface value is to be attributed partly to the fact that most of the ascents are made between 8 and 10 a.m., and the temperature at 500 m. at that time is above the mean temperature for the day.

Gold showed that the gradient up to 2 km. depended very considerably on the wind direction as well as on the time of the year. He found that inversions were most frequent in winter and with easterly winds; that they occur very rarely indeed with N.W. winds, and then in summer, a season when they are not found with winds from other directions.

[1] From a Report to the British Association upon the Present State of our Knowledge of the Upper Atmosphere as obtained by the use of Kites, Balloons, and Pilot Balloons. Prepared by a committee consisting of E. Gold and W. A. Harwood.

Field made kite ascents in India and over the Arabian Sea during the S.W. monsoon, and found a very rapid decrease of temperature up to 300–400 m. At greater heights up to 3,000 m. the gradient was very close to that for saturated air rising adiabatically, *i.e.*, about 5° C. per km.

Hann deduced from mountain observations that the mean temperature gradient up to 3 km. is 5·7° to 5·8° per km. The earlier balloon ascents give for the mean value 5·1, the later 4·8, while the kite ascents give 4·7. It is therefore to be expected that the mean temperature of the air in contact with a mountain 3,000 m. high will be 2° to 3° C. below that at the same height in the free atmosphere. The elevated parts of the earth's surface exercise a cooling influence on the upper air, *i.e.*, the mountains are not cool because the upper air is cooled by adiabatic convection, but they are cool because of radiation to space. It follows from this that convection does actually raise the temperature of the atmosphere up to 3 km. altitude above what it otherwise would be, a fact pointed out from theoretical considerations by Gold.

The results of direct comparison of simultaneous observations are in agreement. Berson found from a comparison of the temperature observed in balloons with that observed on the Brocken (1,140 m.) that the mountain was 0·9° C. colder than the free atmosphere.

Shaw and Dines found from twenty-eight kite ascents made in July, August, 1902, that the temperature on Ben Nevis (1,343 m.) was in all cases lower than that in the free atmosphere at the same height over the sea to the west of the mountain, the mean difference being 2·6° C. Additional evidence in support of their result was furnished by the fact that the height at which the kite reached the clouds was invariably greater than the height at which the clouds were observed over the neighbouring hills. They suggested that the difference might be due to the westerly stream of air rising to cross the mountains and producing an approximately adiabatic gradient of temperature.

Schmauss has recently considered the simultaneous values observed on Zugspitze (2,965 m.) and recorded at the same height in balloon ascents from Munich, 90 km. distant. He found a mean difference of 1·6° C. between the synchronous temperatures, and 1·1° C. between the temperature recorded in the free atmosphere and the mean temperature of the day at Zugspitze. In both cases the free atmosphere had the higher temperature. Schmauss deduced also from a comparison of the temperatures on Zugspitze and Sonnblick that the latter was 0·6° C. colder than the former at the same height, and consequently a mountain in the middle of a mountainous district is colder than one on the edge of such a district. This may be taken as further evidence that the atmosphere is cooled by the mountain.

In dealing with the registering-balloon results, the mean temperatures at each kilometre for each month of the year have been formed for ten stations: Berlin, England (Pyrton Hill, Ditcham Park, and Manchester), Koutchino by Moscow, Munich, Paris, Pavlovsk (near St. Petersburg), Strassburg, Uccle, Vienna, Zürich. From these means the mean yearly temperature at each height has been calculated for individual stations, and the mean monthly temperature at each height for the stations taken collectively.

The following table gives the mean gradient of temperature determined from the general mean values:

Height	0–1	1–2	2–3	3–4	4–5	5–6	6–7	7–8	
Gradient	3·6	4·3	5·2	5·8	6·3	6·8	7·2	7·4	
Height	8–9	9–10	10–11	11–12	12–3	13–14	14–15		
Gradient	6·8	5·0	3·3	0·7	−0·8	0·0	−0·1		

The values agree on the whole with those obtained from kites and manned balloons, but they do not show the constancy of the gradient in the region 1–4 km.

The maximum value occurs in the layer 7–8 km. and indicates that in that region the effect of radiation is to leave practically unchanged the natural gradient in air in adiabatic vertical motion. This result is interesting in connection with Gold's deduction that in the upper layers the absorption, being in excess of the radiation, tended to diminish the gradient by raising the temperature, while in the lower layers radiation, being in excess of absorption, tended to diminish the gradient by cooling. There must therefore be an intermediate height at which radiation and absorption exactly balance, and the results indicate that this is between 7 and 8 km. in temperate latitudes.

The values of the temperature at different heights deduced from the two series of manned-balloon ascents and by C. Abbe from Teisserenc de Bort's registering-balloon ascents are given in the table:

Height	0	1	2	3	4	5	6	7	8	9	10 km.
First Series	83·4	78·4	73·4	68·0	62·7	56·3	49·4	42·8	35·6	26·6	—
Second ,,	81·6	77·3	72·2	67·1	61·3	55·1	48·2	40·7	34·5	30·8	22·5
Abbe... ...	82	78	73	69	64	57	52	44	35	31	22

The results agree sufficiently to prove that they represent with fair accuracy the temperature of the air.

EDUCATIONAL PRACTICE AND THEORY.

(1) *High School Administration.* By Horace A. Hollister. xi+379 pp. (Heath.) 5*s.*

(2) *Education for Efficiency.* By E. Davenport. 184 pp. (Heath.) 2*s.* 6*d.*

(3) *A Syllabus of the History of Education.* By Wm. J. Taylor. ix+147 pp. (Heath.) 2*s.* 6*d.*

(4) *Educational Essays.* By John Dewey. Edited by J. J. Findlay. 167 pp. (Blackie.) 1*s.* 6*d.*

(5) *Logic, Inductive and Deductive.* By A. L. Jones. x+304 pp. (Bell.) 4*s.* 6*d.*

(6) *Lectures on the Experimental Psychology of the Thought Processes.* By E. B. Titchener. ix+318 pp. (New York: The Macmillan Company.) 5*s.* net.

(7) *The Elements of Ethics.* By J. H. Muirhead. xiv+296 pp. (Murray.) 3*s.*

The most informing sources of information are usually the most indirect. If we want to know something of the real inside working of American high schools, we may either go to such a volume as that containing the reports of the Mosely Commissioners or to a book like that which Mr. Hollister has published on "High School Administration" (1); and though Mr. Hollister is not writing to give information, the chief interest of his book to English readers lies in the sidelights it throws both upon what our American cousins are doing and how they are doing it. The American high school is a very different institution from the English secondary school. There, "side by side, are children of the rich, the well-to-do, and the very poor; of the leisure class, the merchant, and the coal digger; of the genius, the successful man, and the 'born short'; of the pagan, the Jew, and the Christian . . . of the white race, the yellow race, and the black race." Such a community presents a social problem altogether different in kind from that which any English schoolmaster has to face, and although the author makes some complimentary references to English examples of successful social organisation—amongst which is the inevitable Arnold of Rugby—we may doubt whether such heterogeneous elements are to be knit together by sixth-form government or transplanted house systems.

In a chapter on the relation of high schools to colleges, the author raises a question of great practical importance, which is discussed more fully from an ultra-industrial point of view by the Dean of the College of Agriculture in the University of Illinois (2). What policy is to determine the question of curricula in the secondary schools? Shall they regard themselves as preparatory schools for the universities or as preparatory for life in any situation, or as primarily vocational in their educational programmes? Dr. Davenport's book illustrates the strong popular demand for a wider range of work which is pulling the schools in one direction, whilst the increasing demands made by university authorities on their entrants is tending to force them in another. "Education for efficiency" requires that all subjects shall be taught in all schools: "It is the business of a school, as of a university, to teach more things than any single man may desire to know." All the institutions of learning in a democratic State should reflect in their laboratories and their class-rooms "the life and essential activities of our civilisation, at least in all its major aspects." Mr. Hollister is trying to find a mean between these two extremes—a general education with a nucleus of compulsory subjects and a limited number of "electives," as the American schoolmen call our school options. Dr. Davenport declares the truth to be that "there is no such thing as a 'general education,' except one that fits for nothing in particular, leaving the possessor stranded without occupation or other field for the exercise of his trained activities." He pours scorn upon our terms "general," "non-technical," and "liberal" as applied to school activities. The sooner all traces of their sinister influence are removed from the schools and from our ideas about them the better. Such notions are altogether unsuited to the needs of our complex industrial life.

Whatever we may think of his case, there is no question of the eloquence and skill with which he pleads on its behalf. He is so far convincing that he at least confirms us in the belief that the schools have not yet sufficiently taken count of the industrial and social changes of the last century. In this matter they are only exemplifying a general principle traceable throughout the history of education. Schools always follow in the wake of changes in philosophical, religious, or social points of view. The value of the study of the history of educational thought lies principally in tracing out this connection. Synopses and extended histories of education are apt to leave this out of count; for that reason it is not uncommonly held that the study of the subject is rather of antiquarian than of academic interest (3).

In the domain of educational theory America has no better representative than Prof. Dewey, and our thanks are due to his English colleague—one might almost have said disciple, since Prof. Findlay's interesting preface tells us that he has abandoned his early Herbartianism for a less formal educational philosophy—for making more of Dewey's work available to English schoolmasters (4). This little book contains two admirable essays on the ethical principles underlying education. It is impossible even to indicate their general nature here; let it therefore suffice to say that every schoolmaster will do well to read them. Incidentally, he may learn something of that "pragmatic" attitude of mind which is the despair of the orthodox metaphysician.

From the school to the philosopher is, after all, no unusual step to take. Prof. Dewey himself has abandoned pedagogy for the serener atmosphere of "pure" thought. We may then turn to a little introduction to scientific method (5) without any great violation of precedent. Its author professes logic in the same school of learning as Dewey himself. His book is quite the most readable and generally useful introduction to that subject that we have met. The old order of treatment is abandoned; from the outset Prof. Jones keeps a grip upon reality. He is anxious to show the relation of his subject-matter to practical thinking of every type. Especially we welcome those chapters on statistics, averages, and the methodology of typical systems of knowledge—history, amongst others. The style of the book is admirably clear, and the choice of material is just that which a student of the practical applications of logical doctrine would wish.

The energy of Prof. Titchener is almost boundless. Yet another book from his pen! (6) This time he gives us the text of five lectures on the "Experimental Study of the Thought Processes," delivered in the University of Illinois. There are more than a hundred pages of notes to the text of the lectures, which occupy less than two hundred pages. This arrangement makes the book rather difficult to read; but it contains so valuable a summary of current psychological doctrine that we are glad enough to have it all. It offers most striking evidence of the great advance which experimental psychology has made in recent years, and those who are interested in the progress of that subject without having the time to keep up with its journals cannot do better than follow Prof. Titchener's clear lead through the tangle of conflicting theory which at present besets it.

From this array of theoretical and practical books that hail from the other side of the Atlantic it is a relief to turn to a new edition of an old English friend (7). Prof. Muirhead has brought his well-known primer of ethics up to date by taking count of contributions to ethical doctrine which have appeared since 1894. The book has been five times reprinted since that date, a fact which speaks eloquently of its usefulness. Nevertheless, the changes in this edition were necessary if the book was any longer to serve its purpose as an introduction to the serious study of the subject.

BOOKS FOR THE CHEMISTRY LESSON.

(1) *Elementary Chemistry.* By H. Godfrey. xiv+456 pp. (Longmans.) 4*s.* 6*d.*

(2) *Elementary Modern Chemistry.* By Wilhelm Ostwald and H. W. Morse. xii+291 pp. (Ginn.) 4*s.* 6*d.*

(3) *Introduction to Practical Chemistry.* By A. M. Kellas. viii+262 pp. (Frowde and Hodder and Stoughton.) 3*s.* 6*d.* net.

(4) *Chemical Notes and Equations, Inorganic and Organic.* By G. H. Gemmell. xiii+265 pp. (Baillière, Tindall and Cox.) 5*s.* net.

(5) *Practical Chemistry.* By J. Bruce and H. Harper. viii+240 pp. (Macmillan.) 2*s.* 6*d.*

(6) *Course of Practical Chemistry.* By A. B. Riley. viii+156 pp. (Churchill.) 4*s.* 6*d.*

(1) THIS book, by an American teacher, covers in a general manner the ordinary subjects of a school course. It is a reading book rather than a text-book, remarkable for the stress laid on a pedagogic principle somewhat neglected in English science teaching—the necessity for association of new ideas with those already grasped by the pupil. But this is carried to extremes. The opening lines of the atmosphere chapter are typical: "Down at the bottom of the briny ocean, say the fairy chronicles of the Arabian Nights, stand cities and palaces where live a race who, spending their lives under the waves, eat and sleep,

work and play, beneath the salt sea." Even so, continues the author, do we live at the bottom of an ocean of air. Yet in some cases the allusions and explanations are most useful. The illustrations, especially the portraits of great chemists, are splendidly reproduced, but many of them are far-fetched; for example, the views of a busy harbour and breaking waves in the chapter on chlorides, the lightness of hydrogen as illustrated by haymakers neglecting their work to watch a balloon. There is some doubt for what class of students the book is intended when opposite a discussion of theory of solutions stands a picture of electric tramlines to show conduction by metals. Inaccuracies occur, as when Priestley is represented as arguing that the part of the air which has combined with mercury can be obtained from the red ash by reheating. Equally misleading is the statement that to the question, "What is water?" Cavendish gave the reply, "It is hydrogen oxide." His real answer was: "Water consists of dephlogisticated air united to phlogiston," or inflammable air.

(2) In the second book are presented the main facts usually considered in a first course of chemistry. In addition to the commonly studied non-metals, the chief metals are included, together with a simple account of modern methods of extracting them from their ores. Instructions are given also for the performance of a number of experiments. It is a special feature of the book that constant use is made of new facts in illustration of the more important general laws of the science. To allow of the inclusion of so many subjects within less than 300 pages, the authors have concentrated their attention on essentials, omitting details, *e.g.*, of physical properties, with which so many text-books are overburdened. The value of the book for teaching purposes is thereby greatly increased. When, as on this occasion, a master of a subject shares in the production of an elementary text-book, criticism of subject-matter is superfluous. In the present case, in arrangement, form, and illustrations, the book is equally worthy of praise. In addition to clear figures of apparatus, there are portraits of eminent chemists. (It is strange not to find Lavoisier among these.) Teachers of chemistry will do well to obtain this book, if only that they may revise their own methods of presenting the subject.

(3) This handbook of practical chemistry has been written specially to meet the requirements of the Conjoint Boards' examination of the Royal Colleges of Physicians and Surgeons. Instructions for qualitative analysis are preceded by sections dealing with general laboratory methods and the preparation of typical compounds of some metals and non-metals. The tests for the radicals are then described in detail, summaries being added of the commoner compounds of each metal, together with their chief properties and an indication of the methods used in their preparation. A final section contains a short course of volumetric analysis—the use of acids and alkalis, silver nitrate, and potassium permanganate—and directions for the gravimetric analysis of potassium chlorate and barium chloride. The book contains a mass of facts, but it must be confessed that its educative value is small. Equations are given throughout, but no explanations of the reactions from the point of view of the ionic theory beyond a brief mention in one of the opening sections. The book will probably be of most value to a student who, having taken a lecture course, has had no opportunity whatever for laboratory work, or has to review the subject for examination purposes; it cannot be recommended for use in schools.

No. 4 is a second edition of a series of lecture notes prepared to meet the requirements of medical students. It has probably found its chief use in connection with the author's own lectures, where it may obviate the necessity for excessive note-taking. The book is accurate and, so far as facts go, up-to-date, but cannot take the place of fuller text-books, theoretical and descriptive.

(5) The authors of this book are by no means alone in their experience of the need of a general laboratory manual for students who have completed an elementary course of chemistry. In this volume directions are given for the preparation of a number of inorganic compounds which the junior student is not likely to have seen. A number of simple organic preparations has been added. The following sections contain directions for the qualitative analysis of simple salts and mixtures and for the simpler forms of volumetric and gravimetric analysis. In fact, the book includes the ground which the ordinary student should cover during the last two years of school life. The directions are concise, but sufficient for the needs of students who have already taken an elementary course of practical work; the methods suggested bear the stamp of actual experience. This book will be found very useful by teachers who have students preparing for university examinations.

(6) The last volume is one of the many elementary handbooks of practical chemistry called forth by the great difficulty of applying the heuristic method in the large classes common in secondary schools. The course includes the common non-metallic elements and their compounds, with additional sections on elementary volumetric and qualitative analysis. The book is designed for the beginner in the subject; but even in the introduction the beginner is directed to test for ferric sulphate with potassium sulphocyanide! Directions for practical work are intermingled with statements of fact, so that it is not easy to distinguish which experiments the student is to perform. It is clear that the text is meant to be supplemented by directions from the demonstrator; but the author should remember that the book may fall into the hands of the solitary student, and should therefore not suggest the addition of sodium to water without a word of caution, or direct that sulphuric acid be diluted by pouring water into it drop by drop. The book would be improved by an index and by diagrams of apparatus.

HISTORY AND CURRENT EVENTS.

It is evident that we are living in times of revolutions. Among those revolutions is one that has not yet gained a place in our text-books—an industrial revolution. In the novels of the early Victorian period, what is the position of women? Even such a broad-minded man as our friend Oliver Wendell Holmes seems out of date now in his treatment of their position. In these days the equality of the sexes in many departments of life is an acknowledged fact, on which the practical men of the world base their calculations. In many departments the women are superior. Compare, therefore, this industrial revolution with that which is a commonplace in our school teaching about the eighteenth century. We "excuse" Walpole his "bribery and corruption" because he ruled between the Puritan and the Industrial revolutions. We "excuse" the younger Pitt because his energies were taken up with fighting Napoleon. But in the years 1815–32 we do not "excuse" Wellington and his allies for refusing the franchise to the then-risen middle classes. Is the parallel obvious?

The demand on the part of women for the Parliamentary franchise may or may not be an "advance." That is one

of the questions which these paragraphs avoid answering. But we note that it is already affecting our historical terminology. Until women became an "estate"—*i.e.*, a part of the community whose interests and power seem to require their inclusion in the body politic—the phrase "universal suffrage" was sufficient to denote the demands of Chartists or seventeenth-century Radicals. Now we cannot use this phrase in the old sense: instinctively we insert the word "male." If the movement prove successful, the women will be "the *people*," and those who have opposed it will be regarded as "unenlightened" or "enemies of the *people*." The judges who in the nineteenth century developed the law on women's property will be regarded as "the brave champions of the *people's* cause." This change will therefore be parallel to that which came with the necessity for frequency of Parliament in the end of the seventeenth century. For more than two hundred years an annual meeting has become a necessity for taxation and legislation, and instead of regarding this as a burden (as they did as late as Elizabeth's reign) we call it "the right of the people," and brand all who have striven to avoid it as "tyrants," "arrogant priests," or "favourites."

EDWARD, heir apparent to the throne of George V., has been created Prince of Wales, and, as he is "under age," there is to be an Act of Regency. Not all our heirs apparent since 1284 have been "Princes of Wales," though most of them have been, and regencies have not been common in England. The one that dwells most in the popular mind was held by a person who, were he not a character in history, would not be mentioned in decent society; and his regency was occasioned by a premature second childhood. That was in days when the King was a factor in party politics, and students of eighteenth-century history know the troubles that ensued when that second childhood threatened to be still more premature, and the heart-burnings that were suffered when it seemed a second time to be imminent. Curiously enough, regency Bills providing for a king "under age" have never come into force, for, since Parliament has managed things of that kind, we have never had a royal "minority." The Tudors had one minor king, and his father provided the council beforehand. Edward V. had a "Protector." Henry VI. was supposed to govern from the time he could talk. He was crowned (twice) as an infant, and at eleven years old had to attempt to keep the peace between his warring uncle-councillors. *Absint omina!* Long live the King!

PARLIAMENT is exercised concerning two matters of ecclesiastical interest in connection with the new reign. Not all persons in the kingdom of Great-Britain-and Ireland-&c. have religious freedom. Neither the Chancellor of Great Britain nor the Lord Keeper, nor Lords Commissioners of the Great Seal nor the Lord-Lieutenant of Ireland, may be Roman Catholics. Of course, anyone may preserve his religious freedom by declining any of these posts if offered. But the Sovereign is born to his religious disability, and the Regent may almost be said to be in the same condition. In all the discussions now going on with respect to the words in which King George is to assure his subjects that he is not a spiritual subject of Pius X., there is no word of his being free in the matter. Not only so, but, if the newly proposed form becomes law, he must commit himself to that party in the Church of England which does not deny the title of "Protestant" to "the Reformed Church as by law established in England." The Regent-possibly-to-be is also, if the Bill for giving her authority passes in its present form, bound not to "become reconciled to the Church of Rome or marry a person professing the Roman Catholic religion," and there are some who would like still further to limit her religious liberty. But why is this special aversion from "Rome" above all other Churches?

ITEMS OF INTEREST

GENERAL.

THE British Association will meet this year in Sheffield from Wednesday, August 31st, to Wednesday, September 7th. An interesting programme is in course of arrangement for Section L, Educational Science. The president for the meeting is Principal H. A. Miers, F.R.S., and his presidential address will be delivered on Thursday morning, September 1st. It is intended to give up the whole of Friday, September 2nd, to the subject of educational research, and the meeting will be a joint one with the Anthropological Section. Prof. J. A. Green, of Sheffield, the secretary of a committee which has been investigating the mental and physical factors involved in education, will present a report on the present position of educational research at home and abroad. Dr. Gray will also present a report on behalf of a committee of the Anthropological Section on methods of observing and measuring mental characters. It is hoped that Prof. Münsterberg, of Harvard, will open the discussion, which promises to be an important one. Dr. Lucy Hirsch Ernst, Prof. Lippmann, of Berlin, Dr. Kerr, the principal medical officer of the London County Council, and several members of his staff, Prof. C. S. Myers, Dr. T. P. Nunn, and Dr. Rivers, of Cambridge, amongst others, have signified their intention to take part; and reports will be presented, by the investigators, of serial observations on school children and others which have been conducted in London, Liverpool, Sheffield, Wolverhampton, and elsewhere.

ON Monday morning, September 5th, Mr. J. G. Legge, Director of Education in Liverpool, will open a discussion on handwork and science in elementary schools. On Monday afternoon there will be a joint discussion with the Chemistry Section on the neglect of science in commerce and industry. Mr. R. Blair, the Education Officer of the London County Council, will open the discussion, and Prof. Bovey, F.R.S., Principal E. H. Griffiths, F.R.S., Sir William Tilden, F.R.S., and others have promised to take part. On Tuesday morning, September 6th, the subject of open-air studies in schools of normal type will be taken up. There will be papers by Mr. J. E. Feasey, of Sheffield, and Mr. G. G. Lewis, of Kentish Town, and Prof. Mark R. Wright, of Newcastle-on-Tyne, will read a paper on "A Training College under Canvas." On Tuesday afternoon a joint meeting will be held with the Physiological Section for the discussion of voice production. Dr. A. A. Gray, Mr. H. H. Hulbert, Principal Burrell, of Isleworth, Prof. Wesley Mills, Mr. W. H. Griffiths, and others will contribute papers. In accordance with the usual practice, visits to schools and other educational institutions of interest will be arranged during the meeting. The secretaries of the section are Mr. W. D. Eggar, of Eton, Mr. J. L. Holland (Recorder), County Hall, Northampton, and Mr. Hugh Richardson, of Bootham's School, York.

MR. OSCAR BROWNING was on July 2nd presented with a silver cup and cover by the former students and staff of the Cambridge University Day Training College to commemorate his principalship for the first eighteen years of

the existence of the college. In his reply, Mr. Browning said the men who have passed through the college—men who without the opportunities it offers would never have been able to enter upon a Cambridge career—have done remarkably well in the triposes. In 1908, for instance, out of eighteen students, six gained firsts and seven seconds, a higher percentage than is to be found in any Oxford or Cambridge college, not excluding Balliol or King's. On the professional side, the members of the college are reported upon by the Teachers' Training Syndicate as the best of all those who sit for the diploma, while of all the training colleges in England, the Cambridge college is the only one to place all its men immediately on leaving. The average commencing salary of its students is £150, and this year, when many trained teachers are seeking work and having to take up most uncongenial occupations, the National Union of Teachers has congratulated him on the unique position held by the Cambridge college.

In reply to a question of Colonel Lockwood asking what progress, if any, has been made with regard to giving effect to the resolutions passed at the conference last November on the subject of the registration of teachers, Mr. Runciman said, in the House of Commons on July 5th, that at the conference the resolutions passed were subject to reservations in the case of several of the bodies represented there. These reservations were embodied in various memoranda submitted to the Board of Education, and have been under consideration. Since then, the Association of Teachers in Technical Institutions, who were members of the conference, have held their annual conference, and on June 18th passed the following resolution: "That this association is of opinion that, owing to the complexity of technical education and the diverse qualifications of those engaged in it, the representation accorded to technical teachers on the proposed Registration Council by the scheme submitted to the Board of Education is totally inadequate." The President of the Board has under consideration means by which the registration fees paid to the late council may be returned to those who claim them.

In the House of Commons on July 6th Sir P. Magnus asked the President of the Board of Education for information about secondary schools in which the grant had been augmented with a view to meet the expense incurred in respect of special educational experiments. Mr. Runciman said augmented grant has been paid to the Perse School, Cambridge, annually since the year 1907–8 in respect of special expense incurred in connection with the new oral method of teaching the classics. The results, which are both interesting and valuable, will shortly be available in a report on the working of the system to be published by the Board. Augmented grant has also been paid to schools receiving French or German assistants under the conventions concluded with the French and Prussian Governments. These grants were given in the year 1908–9 to two schools, and in the year 1909–10 to twenty-two. The satisfactory result of this experiment is partly shown by the fact that sixteen of the twenty-two schools have applied for continuance of the arrangement for the year 1910–11, and a good many new applications have been received. Applications for this augmented grant are also being considered in respect of experiments with specialised commercial, engineering, and rural courses, with a new method of teaching music, with botany gardens, and with a scheme of school journeys and practical work in connection with geography and history.

Local education authorities have welcomed the announcement of the Chancellor of the Exchequer in his Budget speech with reference to State aid for technical instruction. Comparing 1908 with this year, the "whisky" money brought in £328,000 less, and the education authorities throughout the country have been faced with a diminished income and increased liabilities. As Mr. George said, "It is not satisfactory that the efficiency of education in this country should depend on the quantity of alcoholic liquor consumed." It is consequently a cause for great satisfaction that the Government has decided to put the State contribution for the purposes of technical education on a permanent basis. The amount available in 1908 has been decided upon as the basis. That is to say, £328,000 has been added this year to the amount which in the ordinary course would have gone to local authorities for technical instruction in England and Wales, for policing in Scotland and for other purposes in Ireland.

In connection with its recent coming of age, the National Home-Reading Union has issued two interesting booklets. Mr. George Radford in his "Faculty of Reading" (Cambridge University Press, 1s. net.) has produced an extremely skilful account of the Union's origin, ideals, and methods; he has not been content with a bald reprinting of programmes and official statements, but has set out at adequate length the views of the most eminent of the Union's supporters and workers. Those supporters and workers have included the most famous names in English public life; but their support and work have not been of the ornamental kind usually given by distinguished men to new movements of a popular character, but bear evidence of the most careful and loving thought and of the most generous enthusiasm. It is possible that we are wronging secondary-school teachers in thinking that they have hitherto remained somewhat aloof from the Union's work; we sincerely hope so; but if our opinion is well founded, we appeal to them to buy Mr. Radford's little book at once, for we are convinced that its perusal cannot fail to induce them to get into touch with a movement which is actuated by sound national ideals and is destined to exercise a potent influence on the general culture of the great mass of our countrymen.

The other booklet published by the National Home-Reading Union is called "Our Inheritance," and is written by Miss C. L. Thomson (Cambridge University Press, 6d. net). It contains fewer than forty pages: but as a delightful and simple introduction to English literature we offer it a hearty welcome. A child after reading it can hardly refuse so winsome an invitation to enter on his "inheritance." Mr. Rackham's drawing of Titania and Bottom, which serves as a frontispiece, will of itself entice him to the land of gaiety and romance which Miss Thomson promises her readers. We hope that those readers will include every English child who leaves an elementary school this month. The same sympathy and judgment that have inspired Miss Thomson's little book are to be found in the Union's newly published book list for the Young People's Course. It would be no bad criterion of a secondary-school library's usefulness to its younger members, if it included the whole of this excellent book list.

A joint committee of representatives of principals of training colleges and of the National Union of Teachers has had under consideration the examinations qualifying for admission to training colleges. The committee has come to the conclusion that the establishment of a system of secondary-school efficiency certificates is desirable, in order to diminish the number of examinations and provide a recognisable test of adequate general education. It is

recommended that two certificates should be granted, the first at the close of a four years' course at about the age of sixteen, and the second at the close of a continuation course terminating at about the age of eighteen, these certificates to be granted on the results of written and *viva voce* examinations founded on the curriculum of the school, but of a uniformly high standard, considered together with the school records and recommendations of the teachers. The first certificate might be accepted for pupil-teachership or bursarship, while the second, which should be of the standing of the present London matriculation examination, might be accepted universally as qualifying for admission to a training college, to any university, and to any learned profession.

REFERENCE is made to matriculation examinations in the recently published "Reports from those Universities and University Colleges in Great Britain which participated in the Parliamentary Grant for University Colleges in the year 1908–9" [Cd. 5246]. The Board of Education says the Universities have recently shown that they realise that the tests they severally impose upon students applying for admission to their courses in preparation for degrees must have a profound influence upon the curricula of secondary schools, and that, if a common policy cannot be reached, evil results must ensue to the schools, and so, indirectly, to themselves, from the confusion caused by the multiplicity of tests for which school pupils must be prepared. Important and far-reaching steps have already been taken towards the mutual recognition of their various matriculation examinations, and the northern universities of Manchester, Liverpool, Leeds, and Sheffield have, under their charters, established a Joint Matriculation Board, which conducts a single examination of all candidates for admission to any one of the four Universities. Much still remains to be done in the direction of substituting a school-leaving examination based upon the school course for an external test, and in the direction of equalising the standards required by the several examining bodies, but there is a general agreement as to the end desired, and the difficulties are chiefly those of means, in both senses of the word. The whole question of examinations in secondary schools is at present under consideration by the Consultative Committee of the Board, and the Board hopes that the report of the committee when presented will point the way to further progress.

THE fifth meeting of the International Congress of Mathematicians, which is held every four years, and met on the last occasion at Rome in 1908, will take place at Cambridge in 1912. In connection with one of the sections of the congress, an International Commission on Mathematical Teaching has been constituted, which includes delegates appointed by the various Governments interested in the congress, and a series of national sub-commissions has been established to assist the International Commission. The President of the Board of Education has appointed Sir George Greenhill, F.R.S., Prof. W. W. Hobson, F.R.S., and Mr. C. Godfrey to be the British delegates, and he has further appointed an advisory committee to assist the commission in the collection of reports and papers on the teaching of mathematics, and this committee, which is to act also as the British Sub-Commission, has been constituted as follows: Mr. C. E. Ashford, Sir G. H. Darwin, F.R.S., Mr. C. Godfrey, Sir George Greenhill, F.R.S., Mr. G. H. Hardy, F.R.S., Prof. W. W. Hobson, F.R.S., Mr. C. S. Jackson, Sir Joseph Larmor, F.R.S., Prof. A. E. H. Love, and Prof. G. A. Gibson. Mr. C. S. Jackson is honorary secretary to the sub-commission. Copies of the reports and papers approved by the advisory committee will be at the disposal of the International Commission above named, and it is intended that they shall be published ultimately as a volume or volumes in the Board's series of Special Reports on Educational Subjects.

THE syllabus of school lessons on "Temperance," previously issued by the Board of Education for England, has been adopted by the Scotch Education Department. It is suggested that at least three lessons on the subject should be given to the children each year as part of the instruction on the laws of health given to supplementary classes. The syllabus consists of three sections, dealing respectively with (i) food and its use; (ii) effects of alcoholic beverages on the body; and (iii) the evil consequences of intemperance to the individual, to the home, and to the State. Lessons on the third section are to be restricted to children more than twelve years of age, and even then attention is to be concentrated on the matter in sections (i) and (ii). The studious moderation of tone which is apparent in all parts of the syllabus reduces to a minimum the danger—a very real one in all such instruction—of arousing a feeling of antagonism in the pupils. An up-to-date physiologist might demur to some of the explanatory notes on the nature and purpose of foods, but he would admit that the rules of health inculcated are sound enough, nevertheless.

MESSRS. BROWNE AND NOLAN have published the first issue of a new educational periodical which is called *The Teacher's Work* and is to appear monthly. Its sub-title—a practical journal of school progress and efficiency—indicates its scope. Our contemporary appeals specially to teachers in Irish primary schools, but those in similar schools in Great Britain will find it provides them with many useful hints and much practical guidance. The price of the new monthly magazine is twopence.

IN the issue of *Science* for June 17th Prof. W. M. Davis contributes a modified and extended form of his presidential address to the Association of American Geographers on the subject "Experiments in Geographical Description." Prof. Davis returns to the question of the systematic description of land forms, on which he discoursed to the Research Department of the English Royal Geographical Society in March, 1909. On both occasions a plea was made for either a careful trial or the adoption of the method of *structure, stage and process* in describing land forms. "Every feature of the land may be treated as the surface form of a certain *structural mass*, accumulated under certain past geological conditions, and placed by crustal movements, with more or less deformation, in a certain attitude with regard to base-level, so that it comes to be acted upon by various external destructive *processes*, which have now carried forward their changes to a certain *stage* of development." In the later address Prof. Davis gave an example of the vagueness which, he asserts, is a common characteristic of the explorer's and the geographer's descriptions of land forms, and then proceeded to describe by his own method certain parts of Italy, such as the dissected coastal plain near Ancona, and the compound valley of the Lamone, which he visited in 1908. The paper concludes with valuable advice on the style of verbal description and the order of presentation, which are serviceable in regard to any system of description, and in conclusion deals with objections which have been raised to Prof. Davis's method. This report, and that in the

Royal Geographical Society's *Journal* (September, 1909) of the earlier paper, supplement each other, and provide together an exposition of the method of structure process and stage which can be recommended to the teacher of geography.

SCOTTISH.

The honour conferred on the Permanent Secretary of the Scotch Education Department has been most heartily acclaimed all over the country. Sir John Struthers, K.C.B., has from time to time come into sharp collision with local authorities, but everyone recognises his single-minded devotion to the cause of education and the steadfastness of purpose with which he pursues his declared policy of keeping Scotland in the van of educational progress. The teaching profession owes him a debt of endless gratitude. He has educated the public to a higher appreciation of the work and worth of the teachers. He has sought in every way possible to magnify their office by increasing their duties and responsibilities, and has identified himself with their aspirations and ideals as no previous chief has done. In the matter of pensions and security of tenure, he has made the conditions of service infinitely more attractive than ever before.

The programme of the vacation courses in connection with Edinburgh University is of the usual interesting and attractive character. Holiday courses are frequently scrappy and unsystematic, and are hardly taken seriously either by the lecturers or their hearers. But the outstanding feature in the Edinburgh courses has been their thoroughly practical and systematic character. The subjects of study this year are French, German, and English. For the French course a brilliant staff of professors has been secured, all of them acknowledged masters in the departments of language, literature, or phonetics. The German teaching staff, though smaller—for German has fallen on evil days—is no less efficient. The courses have obtained official recognition from the Ministries of Education in Germany and France, as well as from the Scotch Education Department.

The Education Department has just issued a minute specifying the conditions of grants to central institutions, such as technical colleges, schools of art, and agricultural colleges. An annual grant not exceeding one half of the net cost of maintenance of each institution will be paid in each case provided the following terms and conditions are fulfilled: (i) that the scheme of work be approved by the Department; (ii) that the qualifications of all lecturers and teachers hereafter to be appointed be submitted to the Department for approval; (iii) that the Department may, at such intervals as may be determined, cause an inspection to be made of any department or departments of the institution, either by its own officers or by other suitable persons; (iv) that all diplomas and certificates issued by the institution shall be awarded on conditions approved by the Department, who may appoint an assessor to act along with the professors or lecturers of the institution in determining the award; (v) that the accounts of the institution be audited to the satisfaction of the Department, and that a copy of the audited accounts be submitted for its information.

On the recommendation of the Senate of Edinburgh University, the Court approved of the following regulations as a tentative arrangement for the bursary examinations in the arts faculty: (i) the subjects of examination shall be Latin, Greek, mathematics, French, German, English, history, geography, Italian, Spanish, Celtic; (ii) every candidate may profess four different subjects, but must select at least two from the following list of alternatives: Latin, Greek, mathematics, French, or German; (iii) the number of marks for each subject shall be the same; (iv) the new regulations shall not come into force until October, 1911.

The particular attention of teachers and managers has been directed by the Education Department to the suggestions in regard to the pronunciation of Greek which have been adopted by the Classical Association of Scotland. It is pointed out that the advantages attaching to a uniform convention in this matter are conspicuous. In the case of Greek, the principles recommended by the Classical Association represent a system corresponding very closely to the traditional usage in Scottish schools. As to the case of Latin, unless good reason can be shown for departure from the accepted convention, the Department intimates that in all the schools under its inspection the recommendations should be acted upon, and his Majesty's inspectors have been instructed accordingly.

Some time ago the Edinburgh School Board approved of a system of promotion in which secrecy was to be the prominent feature. Private and confidential reports were to be called for from the headmasters in regard to the various members of their staff, and by the character of these secret "dossiers" all advances were to be determined. Naturally the class teachers were dissatisfied with a system which had so much of espionage about it, and a petition was recently presented, signed by all class teachers, asking for the abolition of these confidential reports. The Board, after a good deal of discussion, has decided to retain the system of reports, but has instructed the headmasters to show their reports to the members of the staff concerned before forwarding them to the clerk of the Board.

IRISH.

During the intermediate examinations this year a very curious action took place on the part of the Commissioners. For the last two years there has been a well-known difference of opinion between the Commissioners and the schools as to whether a student should be allowed to pass twice in the same grade. The Board has decided in the negative. The schools have never ceased to protest. They are in a serious difficulty with regard to students who in any grade are a year under the limit of age for exhibitions and prizes, and a very widely-spread practice has grown up of entering such students for the examinations, with instructions to them, however, not to pass in the requisite number of subjects. What has usually happened is that the student absents himself from the paper in English. The results of the examination in the other subjects have been a very useful guide to a student's capacities, showing his strong and weak subjects. This year the Commissioners evidently intended to stop this practice. Their method was passing strange. Without sending round any notice or giving any warning, they instructed the superintendents on the morning following the paper in English to exclude from the rest of the examinations any student who had not been present the previous afternoon. Can any educational precedent be found for such action? It seems undignified; but, dignity apart, has a public body any right, after accepting the student's admission fee, to exclude him from examination because, advertently or inadvertently, he has missed one of the papers?

THE Joint Committee representing heads of secondary schools in Ireland has issued an important statement of Ireland's claim for Exchequer grants in aid of secondary education. Ireland is the only part of the United Kingdom which receives nothing from the Treasury for secondary education. The Intermediate Education Board derives its entire income from two sources: (i) the interest on £1,000,000 from the funds obtained by the disestablishment of the Church; (ii) the residue, after £78,000 a year has been paid to the Department of Agriculture and Technical Instruction, of Ireland's share of those customs and excise duties, allocated by the Local Taxation Act between England and Wales, Scotland and Ireland, in the proportion of 80, 11, and 9. It has been urged against Ireland that it has no local rates for secondary education. But (i) there are local contributions, and (ii) this principle is not insisted on universally, or even in the majority of instances, in England. From the report of the Board of Education for 1908–9, it is shown that of 802 secondary schools receiving Exchequer grants, only 294 were controlled by local authorities, while 508 were independent of local control. In England, the sum granted from the Treasury to secondary schools is between £600,000 and £700,000, and calculating Ireland's equivalent in the proportion of 9 to 100, it is clear that Ireland should receive another £70,000. Another anomaly of Irish secondary education is that nothing is received from the Treasury to pay for administration, inspection, or examination. These are all paid for by the Intermediate Board out of its own funds. The claim of the Joint Committee is that Irish secondary education should be put in this matter on the same footing as every other branch of education in every part of the United Kingdom.

IF this were done, the committee points out that an immense improvement could at once be effected in Irish secondary schools. Many small schools could be made efficient. A well-organised scheme of scholarships would open the doors of a secondary school to pupils from the primary schools. A high standard of accommodation and equipment could be insisted on. And, finally, a regular profession of secondary-school teachers could be established entitled to suitable salaries and pensions.

THE Roman Catholic bishops' meeting towards the end of June at Maynooth warmly supported this statement, "which sets forth a clear and convincing proof of the unfairness of the Exchequer in dealing with secondary schools in Ireland as compared with the provision made for secondary schools in England, Wales, and Scotland." They further urged that all Irish Members of Parliament, without distinction of political party, should interest themselves actively in forwarding this just claim for redress in a matter of such importance.

THE Senate of the National University has at last come to the definite decision that the Irish language is to be a compulsory subject at matriculation in 1913, and so, for good or evil, this question is at last settled, and the momentous experiment is to be tried. An ominous note was sounded at the Senate meeting, for a memorial bearing a large number of signatures, including those of twenty professors and lecturers of University College, Cork, one of the three constituent colleges, was laid before it most strongly protesting that, "while desirous that every facility and inducement should be given to encourage the study of the Irish language, its history and literature, we feel most strongly that to make it a compulsory subject will not have the effect aimed at by the advocates of such a course, but will be calculated to prevent students from graduating in the National University." In such professional schools as medicine and engineering "the enforced study of Irish will add another subject to courses already expanded to the limit of the average student."

ARCHBISHOP WALSH, the Chancellor of the National University, speaking at the annual prize distribution of the Holycross College, Dublin, commented on the difficulties of the new University and on its complicated character. It was, he said, a federal university of the most complicated and costly type that had been reached in any country that he knew of. He compared its "present very cumbrous system of Boards" with the simple character of Queen's University, Belfast, and of Trinity College, and complained of the inadequate endowment of the National University. He affirmed that it had been quite unsectarian in its appointments, and congratulated it on its success. He gave the following as the numbers of students in attendance at lectures (he did not say matriculated students):

University College,	Dublin	532
" "	Cork	368
" "	Galway	126
	Total	1,026

WELSH.

A CONFERENCE has been held between leaders of Welsh education from the University colleges, the Central Welsh Board for Intermediate Education, the chairman of the Welsh County Schools' Association, and others, together with the Welsh Members of Parliament, to consider the appointment of an advisory committee to obtain from the Civil Service Commission full information as to appointments in the Civil Service at home and abroad, together with the necessary information as to examinations and vacancies. It is felt by many to be necessary that the instruction given in Welsh secondary schools should be specialised in many directions, and the idea of calling the conference was intended to aid in getting the material for consideration in connection with such an end.

THE Dolgelley Local Education Managers have had their attention directed by the attendance officers to a case in which the Dolgelley magistrates had refused to convict, on the ground that seven absences out of thirty-four opportunities to attend did not justify conviction. It was pointed out that to be absent once from school without a reasonable excuse was illegal. The particular child referred to, it was stated, had only made 51 per cent. attendances during the year. It was urged that the decision, if uncriticised, would have a very bad effect upon school attendance in the district, and it was decided to write to the County Education Committee to ask it to deal further with the matter, and that in future the managers should instruct a solicitor to appear in all cases of school attendance.

THE Free Church Council of Rhyl wrote a letter in 1908 to appeal to the local education authority to make arrangements for teaching Welsh in the elementary schools. The Free Church Council further prepared a petition signed by parents of 334 children in the Rhyl elementary schools. Two months ago the answer was received from the authority that it was not prepared to take the necessary steps for the Welsh teaching. The committee received a deputation from the Free Church Council, and the case was put. "All we desire is that our own language shall be taught in our own country." Still it held:

"The first language to be taught is the language of law and commerce, practically the language of the world, English." Then, the second language should be Welsh. The answer given was that the adverse decision of the committee was due, not to want of sympathy with Welsh teaching, but to the expense, and the chairman observed that they were all opposed to adding to the already heavy cost of education. It was, however, resolved to reconsider the matter.

The report of the superintendent of the Cardiff Technical School for the Lent term, 1910, shows considerable progress. The number of students is 4,007, being 45 per cent. above the number enrolled two years ago. The average attendance representing the grant-earning capacity of the school was stated to be 2,008, or 60 per cent. higher than two years ago. The fact that the average attendance has increased at a much greater rate than even the number of students is a sign, the superintendent notes, that the course system of grouping has been found to be educationally advantageous. This was reported to be the first time that the fees, during a single session, had reached £1,000, and this, coupled with the greater grant-earning capacity due to increased average attendance, showed that the total income of the school had increased very considerably.

At Carmarthen the question has been discussed of reviving evening continuation classes in the winter in the elementary schools. The head teachers pointed out that when the classes were held, ten years ago, they were not a success, but it was maintained that since then there has arisen a great desire for technical instruction among the artisan classes. In view of the preparation being made by Carmarthen people for the competitions there at the next year's Eisteddfod, and by the Nonconformist bodies for great united Sunday school demonstrations in the Eisteddfod pavilion, it was found that it would be impracticable to have the continuation evening classes this year. Eventually it was decided to appoint a subcommittee to institute inquiries.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Le Français de France. By Valette Vernet. xii+158 pp. (Bell.) 2*s*.—A very attractive book of dialogues, scenes, songs, and stories, which shows that Mme Vernet is a teacher of unusual gifts and great understanding of children. The book is written quite on the right lines, and many who teach French to young children will derive help from it. The French is pure and idiomatic, but simple; as Mme Vernet says: *ni classique, ni sublime, seulement enfantin*. If we have any regrets it is that Mme Vernet has made no use of phonetics and that the vocabulary is not complete. Many teachers would prefer to have no vocabulary at all in a book of this kind. A special word of praise must be given to the quite charming drawings of Miss Montbard; the printing, too, is clear and good.

Sonoscript. Devised by Ezra Sykes. 16 pp. (Leeds: Storey Evans.) 6*d*. net.—The headmaster of Headingley Council School, Leeds, here presents "a new system of practical spelling based on phonetic principles." The description of his reformed spelling is correct—except that we do not think it practical. A spelling that represents *choose* by "xw̄z," *length* by "leqŷ," and *wool* by "wwl" may safely be said to have no chance of acceptance. Spelling reformers should bear in mind that if any simplified spelling is ever accepted, it will be one that does not depart too widely from the current spelling.

Fables de La Fontaine. Préface de Jules Claretie. lv+191 and 222 pp. (Dent.) 2 vols. Cloth, 1*s*. 6*d*. net; leather, 2*s*. 6*d*. net each.—To their attractive series, Les Classiques Français, edited by Mr. H. Warner Allen, Messrs. Dent have added this charming edition of La Fontaine's immortal fables. The preface is quite admirable.

Lessons in Grammar and Composition based on Mérimée's "Colomba." By L. A. Roux. viii+44 pp. (Heath.) 6*d*.—This booklet contains a series of exercises based on "Colomba," and arranged so that various parts of elementary French grammar are dealt with in order. The exercises consist largely of translation from English. There are other exercises of this kind: "Form questions and answers with the following: Avec. Attira. Caporal. Fut. Il cachait." This does not seem a very promising type of exercise. The book has evidently been written with care.

Auswahl deutscher Prosa der Gegenwart. By G. Hein. 208 pp. (Oxford University Press.) 3*s*. 6*d*.—This selection from modern German prose writers has been very well compiled, and forms a welcome addition to the texts suitable for school use. Mr. Hein supplies short biographies of the twenty authors represented, and explanations in German of such words and phrases as may present difficulty. The printing is clear and the general appearance of the book attractive, as we expect from the Oxford University Press; but a little more care might have been given in securing uniformity of spelling. Such inconsistencies as *Thal* (p. 9), *Thür* (pp. 14, 21), and *Tal* (p. 18), *Tür* (p. 19), and such old spellings as *an's, in's, mit einander, auf einander, sämmtlich* should not have been allowed to remain.

(1) *Dornröschen.* Von Emma Fisher. 31 pp. (Harrap.) 6*d*. net. (2) *Das Rothkäppchen.* Von Mathilde Reichenbach. 27 pp. (Harrap.) 6*d*. net.—These little dramatised versions of fairy tales are of fairly good quality. (1) has a *Vorwort* (*sic!*) which is not very well written; the printing throughout is rather careless. The songs introduced are well known, but not very appropriate. In (2) also the proof has not been read with sufficient care. The songs are better chosen, except for the last; the introduction in a fairy tale of Rinkart's grand *Choral*, "Nun danket alle Gott," seems to us to offend against good taste.

An Anthology of German Literature. By Calvin Thomas. ix+399 pp. (Heath.) 6*s*. net.—Prof. Thomas is known as the editor of Goethe's "Faust" and the author of a short but valuable "History of German Literature." He has placed students and teachers of German under a further obligation by compiling this excellent anthology. It consists of two parts, each of about 200 pages. The first deals with medieval literature, from which typical poems and extracts have been selected, ranging from the "Hildebrandslied" to the "Narrenschiff"; these are presented in good modern German renderings. The second part contains works of the sixteenth, seventeenth, and eighteenth centuries; here, too, the editor's wide knowledge and good judgment are evident. Throughout he has added short notes on the authors and occasional footnotes to elucidate the texts. Considering the limits of space, the anthology is a notable performance, and rarely do we feel that the selections are not representative of the author. Of Goethe, it is true, only some of the work of his youth is given, and

of Schiller there are only eight pages, similarly drawn from his early work. Of Bürger's works only the "Lenore" appears here; it seems a pity not to have added some of his sonnets, which are among the finest in the German language.

Classics.

Quinti Horati Flacci Opera Omnia Cura E. C. Wickham apud P. H. Lee Warner Mediceae Societatis Librarium. 290 pp. (Published, for the Medici Society, Ltd., by Philip H. Lee Warner, 38, Albemarle Street, London, W.) Edition limited to 1,000 numbered copies, printed on Riccardi hand-made paper. Bound in Michalet grey boards, with canvas back, paper label, and silk bookmark, 16*s.* net. Bound in limp vellum, gold lettering, with silk ties, 25*s.* net. Also sixteen numbered copies printed on vellum—fifteen of which are for sale—bound in limp Kelmscott vellum, with silk ties, £15 15*s.* net.—This book makes a most agreeable impression on the eye. It is got up with real taste, the paper is good, the ink black, the type brilliant. We are especially pleased with the type, because it has no affectation. With the type, the margins are the most important things in a book. In the Odes the margins are ample, and the page is a complete success; the longer lines of the other parts are not always quite so well managed (see pp. 258 and 259, for instance), but only a few pages show this slight fault, most of them being excellent. The more we read the book, the more we like it; and we have no hesitation in calling it a beautiful book. A series of classics like this would be a noble possession for the lover of literature. We should much like to see how English looks in this fine type; the Latin has a most dignified appearance.

Cicero in Catilinam, I., IV. Edited by T. T. Jeffery and J. F. Stout. 94 pp. (Clive.) 1*s.* 6*d.*—The introduction to this book (16 pp.) deals in a satisfactory fashion with the circumstances of the delivery of these speeches. The text is well printed. The notes are of the same type as we usually find in this series, that is, they are made for readers who know nothing and have not a teacher at hand. The subject-matter is often trivial; it is of no importance whatever whether *quo usque* be written as one word or two (p. 31), since the pronunciation, which is the word, is the same. Particles are translated, and the syntax explained (partitive genitive, consecutive subjunctive, and so forth). *Dūci* is distinguished from *dŭci*. The notes on antiquities are useful. *Exaudio*, by the way, is not "I hear distinctly" (p. 78), but "I catch the words," said of something heard from a distance. These books are suited for their purpose, but, as we have said before, they are not suited for school use if the teacher is competent.

The Story of the Kings of Rome, adapted from Livy. By G. M. Edwards. Text with Vocabulary. 50 pp. (Cambridge University Press.) Boards, 8*d.*—This is a cheap edition, without the notes, of a book that we have already noticed with approval. It would be better, we think, without the vocabulary; but that is a matter in which opinions differ.

Crustula. Unseen Passages for Lower Forms. Part I., Latin. Edited by E. A. Wells. 92 pp. New impression. (Longmans.) 1*s.*—These are short passages (ten to twelve lines) from Caesar, Nepos, Phaedrus, Pliny, Curtius, and others, with short footnotes. We do not believe in the use of such books; but this agreeably surprised us with one or two novelties: a pretty set of monkish rimed verses, and Seneca's *regem non faciunt opes* opposite Wordsworth's "Happy Warrior." Indeed, the last section, all too short, is suggestive. *O si sic omnia!*

Caesar in Britain. Selections from the Gallic War. Edited by W. D. Lowe. 96 pp.; illustrated. (Clarendon Press.) 1*s.*—This book is short enough for a term's reading. The text of the earlier exercises is in simple sentences; later the complexity increases, until we have periodic paragraphs. Opinions do not agree whether this is the best way to approach Caesar: our own boyish memories record it as dull. But opinions ought not to differ as to Mr. Lowe's manner of marking quantities: if any are marked, all the long vowels ought to be marked, and then there is no need to mark anything else. Here vowels are marked at haphazard; and how on earth is one to read *vĭtro*, or *săcrificia?* In these, moreover, the marking suggests that the vowel may be long, which is, of course, not so. Mr. Lowe's notes explain too much, leaving nothing for the master to do and very little for the boy. English exercises (sentences), based on the text, are given, and a vocabulary.

Principiorum Liber. By R. J. Cholmeley. 174 pp. (Arnold.) 2*s.* 6*d.*—This book is a novelty in containing a vocabulary which is not meant to be used: at least, the editor says he expects readers to use dictionaries. They will thus waste double the time, as they certainly will try the vocabulary first. The foolish demand for vocabularies is thus cynically met. The book consists of a choice of passages from authors of moderate difficulty, meant for junior schools examinations in Victoria: Cicero, Martial, Livy, Pliny, Horace, Quintilian, Sallust, Tacitus, Catullus, Seneca, Plautus, are the authors. The pieces are more or less complete, and all are interesting: but nothing can make up for the lack of continuity, which is a most serious fault at this stage. Notes explain allusions and difficulties.

T. Livi Ab Urbe Condita, Liber IX. Edited by T. Nicklin. With Vocabulary. 170 pp. (Clarendon Press.) 2*s.* 6*d.*—A short practical introduction precedes this book, including some notes on Livy's style and hints on translations. A list of metaphorical sentences from English writers, with references to passages in Livy where they may be useful, is suggestive, but in our opinion they are often too florid for good taste. The seeing eye and the understanding mind are not in phrases like these: "fortified by the applause of his country," "some alteration of circumstances is impending over him"—what physical form can be taken by an alteration of circumstances?—and some are simply gas, as "the determining factor in the situation." The fact is, Livy's own style is delightful to a trained intelligence for its life; but it is affected, and not a good model for the learner. The modern, in particular, needs chastening in his English. We wholly disapprove of vocabularies at this stage. The notes, as usual, leave very little to the intelligence of the reader, so that the book cannot be recommended where the teacher knows his business; which is a pity, for Mr. Nicklin can write good notes. If only the good ones were kept, and the needless ones dropped with the vocabulary, what a nice book it would be.

English.

Masters of Literature: Thackeray. Edited by G. K. Chesterton. 480 pp. (Bell.) 3*s.* 6*d.*—The other members of this series have already been noticed. It is, of course, to be expected that the selection in this case would be good and the introduction sparkling. Mr. Chesterton is more bound than usual to sparkle here, for he is a profound moralist, and Thackeray a moralist—rather less

profound. Mr. Chesterton argues as Job's comforters do, and would have us believe that Thackeray does the same. But does he?

Goldsmith's Vicar and Plays. Edited by C. E. Doble and G. Ostler. 520 pp. (Frowde.) 2*s.*—This is an excellent and very cheap book. The illustrations, all from old drawings and old editions, are, though occasionally rough, admirable. It seems a shame to hint that some of the beautiful 1805 edition plates might have been used; and the Mulready woodcuts are new to modern readers. There is a glossarial index and an appendix. It is the best cheap Goldsmith on the market.

Selections from the Spectator. Edited by J. H. Lobban. 248 pp. (Cambridge University Press.) 1*s.* 4*d.*—This little book has a sensible introduction and a few notes: but it does not bring home the *Spectator* to us. No edition does; we want to see a facsimile reprint of the famous newspaper, and we want the old spelling and founts. But that is asking a good deal; and meanwhile Mr. Lobban's help is all that we need. Possibly the world might get nearer to Addison if he were brought nearer to us.

Pope's Essay on Criticism. Edited by J. Sargeaunt. 64 pp. (Clarendon Press.) 2*s.*—This is quite a dainty book, printed well on thick paper. It contains an introduction, the text as it looked in Pope's day, Pope's notes and the editor's, and is in all respects the reverse of a schooly school book.

Selections from Ruskin. Edited by H. Hampshire. 132 pp. (Bell.) 1*s.*—The extracts are from "Sesame and Lilies," the "Political Economy," and the various descriptions of scenery. One lecture from the "Two Paths" is added. More should have been said in these days of Ruskin's political economy; three lines in the introduction are scarcely enough.

Selections from Lockhart's Life of Scott. Edited by A. Baster. 144 pp. (Bell.) 1*s.*—Lockhart goes well in selections, and is an admirable book for boys. If people will no longer read Scott's novels—more shame to them—at least the weak heroic life may attract them. Scott was a boys' man.

Johnson's Rasselas. Edited by A. J. F. Collins. 128 pp. (Clive.) 2*s.*—As an examination book this is admirable, the introduction and notes being very full. People who read "Rasselas" for pleasure, and there are some, prefer a dainty, old-world copy. This is thoroughly modern.

Anson's Voyage Round the World. Selections by C. G. Cash. 131 pp. (Alston Rivers.) 1*s.* 3*d.*—Mr. Cash has produced a most readable and tidy version, adding an introduction and a very good portrait.

Sylvia's Lovers. By Mrs. Gaskell. 535 pp. (Frowde.) 1*s.*—This reprint of the famous press-gang novel has an introduction by Mr. Clement Shorter. It is one of the World's Classics, and will, of course, be welcomed.

Guide to Commercial Correspondence and Office Routine. By W. G. Patton. vi+168 pp. (Blackie.) 1*s.*—The author of this book writes for boys preparing for such examinations as those set by the Royal Society of Arts and the National Union of Teachers. When the school-leaving age is raised we can imagine that the last year will be usefully given in large urban centres to some such preparation for office work as is here outlined; but we hope that purely technical matters will be subordinated to such live subjects as commercial geography and really practical arithmetic—for we believe that merchants complain rather of unpractical knowledge than of absence of technique.

History.

An Outline of History for the Grades. By E. W. Kemp. viii+352 pp. (Ginn.) 5*s.* 6*d.*—In the United States of America they believe in teaching world-history in the schools, and because this is a large subject and time is short, they introduce the beginnings to their "first grade," *i.e.*, their youngest pupils. Thus the youngest study the primitive Aryan, the "second grade" learn of Egyptians, Hebrews, Phoenicians, and so on, through Greece, Rome, and the Middle Ages in four more years, while the seventh and eighth years are devoted to the history of their own country. Such a pace almost takes one's breath away, and it is possible only by treating the subject in its broadest outlines. To help ordinary teachers to know enough to teach such a subject among many others, the author has written this book, in which he suggests topics of study and gives bibliographies to help in further study. To us it seems that few teachers, unless they are specialists in the subject, would be able to read even a tithe of the books recommended, and many will assuredly and necessarily content themselves with what is here provided. It is an excellent ideal; but how far from what is practicable!

Longmans' Elementary Historical Atlas (1*s.*) consists of twenty-five out of the eighty-eight maps in Gardiner's "Atlas of English History," already so well known.

The Great Rebellion, 1603–1660. By A. Hassall. xx+192 pp. (Rivingtons.) 2*s.* 6*d.*—Mr. Hassall has compiled this booklet from the latest and best authorities on the period, and the story is, on the whole, well told. But some things are mentioned which are not explained fully (*e.g.*, the Self-Denying Ordinance, p. 119), and there is no evidence in these pages that the author clearly understands the differences in the principles and policy of the various religious sects of the time. The phrases "Church" and "Church of England" are often used to mean the Episcopalian party. There are maps, tables of dates, &c., and an index.

Makers of History. By A. E. McKilliam. 160 pp. (Cassell.) 1*s.* 2*d.*—Thirty-two lives of men and women famous in connection with British history are given in this book. Most of them did all their work in or for this country, the only exceptions being Julius Caesar, who begins the list, Joan of Arc, Columbus, and Napoleon Bonaparte. The stories are well and simply told, and there are sixteen pictures, besides a coloured frontispiece.

The West Riding of Yorkshire. 40 pp. (Pitman.) Paper, 3*d.*; cloth, 4*d.*—This is a simple reader on the geography and history of the district, plentifully illustrated and well adapted for use in the schools.

A Book of Southern Heroes. By A. J. Dicks. 181 pp. (Ralph, Holland.) 1*s.* 6*d.*—The author gives a collection of stories from Greek and Roman literature, the foundation of Thebes, the Golden Fleece, Perseus, Theseus, Hercules, Ulysses, Aeneas, &c., told generally in prose, but sometimes by means of translations from Homer or Virgil, and ending with Macaulay's "lay" of Horatius. A good book for the school library.

Builders of History. Books I.–VI. 128 pp. each. (Edward Arnold.) 8*d.* each.—A series of short biographies

of men famous in English history from Cædmon to Charles Dickens. The stories are well told and there are a number of good illustrations.

Canada, the Empire of the North. By A. C. Laut. xxvi+446 pp. (Ginn.) 7*s.* 6*d.* net.—The author of this book does not profess it to be "formal history." She prefers "pictures of men and women, of moving throngs and heroic episodes" to "lists of governors and arguments on treaties." She has accordingly written "the romantic story of the new Dominion's growth from colony to kingdom" (we confess we do not quite understand all these phrases), and the result is a most interesting account of the great events in Canadian history from the time of the earliest discoveries to the present day. There is an abundance of portraits and other pictorial illustrations, as well as an index.

Geography.

The Statesman's Year Book. Edited by Dr. J. Scott Keltie and I. P. A. Renwick. civ+1404 pp. (Macmillan.) 10*s.* 6*d.* net.—The new edition of the "Statesman's Year Book, 1910," marks the forty-seventh publication of this useful work. This volume chiefly differs from earlier issues in revised statistics, corrected statements, and in the addition of new articles on matters of current interest. To many persons the "Year Book" is useful as a work of reference, but to teachers it is simply invaluable; one copy at least should be provided by school authorities as part of the equipment of the school. Teachers will here find a storehouse of well-arranged facts from which they can prepare lessons full of accurate and up-to-date information. The article on "the powers of Second Chambers" would be extremely useful in a lesson on the present relationship of the House of Lords to the House of Commons, while the lists of warships of the British and German navies might be utilised in a lesson on naval defence. Probably, however, the teacher of geography would find the annual most valuable in supplying him with data for practical exercises. School text-books and atlases soon get out of date, and they cannot be changed very readily for new editions or for new publications. The necessary corrections can be made easily from the "Year Book," as it is divided into sections giving detailed articles on the government, commerce, agriculture, &c., (i) of the various parts of the British Empire; (ii) of the divisions of the United States; (iii) of the other important countries of the world. Among the excellent maps of the present edition may be mentioned those of the proposed Central Scotland Ship Canal, the proposed Georgian Bay Ship Canal, and the recent adjustment of the political boundaries in South America.

Mathematics.

Woolwich and Sandhurst Mathematical Papers, 1900–1909. Edited by J. Brooksmith and R. M. Milne. Answers. (Macmillan.) 6*s.*—The papers set for the Army Entrance and Qualifying examinations in recent years have had no small influence upon the character of mathematical teaching in public schools. Even within the short period represented by the papers in this book there is a marked alteration in the character of the questions, and they provide material for a student of the historical development of teaching. In them, for example, we can trace the decline and fall of the influence of Euclid in elementary geometry. In 1900 Euclid's sequence is required; then until 1905 it is stated that Euclid's sequence and demonstrations will not be required; after that year he is not mentioned. The two most striking features of the changes which have taken place appear to be the bringing of the different branches of elementary mathematics into closer connection with each other, and the association of practical work with theory. An examination in practical measurements was first held in September, 1905, and has been gradually extended to various branches of study. In the theoretical papers the number of questions has been diminished, but this is compensated by the increase in the content of each question. As a rule they no longer deal with a single point, but require the candidate to make use of several weapons in his mathematical armoury. All teachers, whether concerned with army classes or not, will profit from a study of these papers.

Weighing and Measuring. By W. J. Dobbs. x+176 pp. (Methuen.) 2*s.*—It is now generally recognised that practical work in weighing and measuring is a valuable complement to an ordinary course of elementary mathematics. The work is in itself interesting, and it clothes with reality much otherwise dull work in arithmetic and geometry. Mr. Dobbs's little book contains all that is required for such a course. There is nothing very novel, but it is well arranged and the directions are clear. The five sections deal respectively with the determination of length, weight, area, volume, and density, and there are appendices containing papers set for the Army Qualifying and Board of Education examinations. These papers indicate the possibilities of work of this description, and will help teachers intending to introduce it into their schools.

Examination Papers in Arithmetic, Logarithms, and Mensuration. By Charles Pendlebury. iv+212 pp. Answers. Seventh edition. (Bell.) 2*s.* 6*d.*—Two-thirds of the matter in this edition is new, and the whole has been revised and rearranged. There are more than 1,200 arithmetical examples, and about 250 exercises in the use of logarithms and mensuration. In addition there are numerous examination papers set since 1905 by the Universities of Oxford, Cambridge, London, and the Army Qualifying Board. Teachers using this book will therefore be able to give their pupils abundant exercise in the more recent type of questions.

Science and Technology.

Geology (Shorter Course). By T. C. Chamberlain and R. D. Salisbury. xvii+978 pp. (Murray.) 21*s.* net.—The advanced course of geology, in three volumes, by Profs. Chamberlain and Salisbury has attained already a considerable reputation in this country. The present work, on similar lines, but of more convenient size, will probably become equally popular among those students who require a less exhaustive treatment of the science. The subject-matter of the book is considered, as usual, under the two main heads of dynamical and structural and of historical geology. The authors, however, regard all its phases, as far as practicable, from the historical point of view—the treatment of river-systems is one example of many which might be cited—and the book therefore provides an unusually coherent account of the present state of knowledge of the subject. Perhaps its most valuable features are the clear distinction drawn between established fact and unverified hypothesis, and the stimulating frankness with which the evidence in regard to both is laid before the reader. Salutary, too, for the British student will be his introduction to the wide field of American geology as furnishing the chief material for exposition, and the contemplation of his own country

as of secondary geological interest. The book appears to be thoroughly up-to-date on all sides: it is probably by an oversight that Neuropteris and Sphenopteris are figured as ferns on p. 645. The 608 illustrations are beyond praise for artistic beauty and apt elucidation of the text, and the plates of contoured maps from the U.S. Geological Survey are equally illuminating.

Field and Woodland Plants. By W. S. Furneaux. xvi+383 pp. (Longmans.) 6*s.* net.—The amateur botanist who wants a plain, unvarnished account of the commoner wild flowers will find Mr. Furneaux's book useful and trustworthy, and well provided with illustrations for help in identification. The plants are grouped according to habitat and season—a decidedly good feature in a book intended for beginners. It is to be regretted that the author did not take so excellent an opportunity to emphasise the influence of environment upon structure, which never fails to fascinate the unjaded student.

The Young Carpenter. By Cyril Hall. vii+280 pp. (Methuen.) 5*s.*—This book, which is one of a series intended as a guide to aid the young craftsman, is written in a very racy manner, and deals in great detail with the different tools used by the woodworker and the methods of using them. In addition, there are chapters on wood, painting, staining and varnishing, and French polishing. It reflects unsatisfactorily on the average carpenter to be told that the bad outnumber the good (p. 3). On p. 16 we are told that machines exist which "manufacture, at the rate of *hundreds of feet a minute*, the matching and deals used for making cupboards and boxes"; and on p. 17 that "great rough dirty baulks of timber go into a hissing and shrieking machine, and come out as nice smooth tongued and grooved match-boards, all cut to the same thickness and planed and squared in a few *seconds*." A lack of exactness is far too prevalent in the book, and we cannot commend the author on the clearness of his explanatory text in the constructional part of the work. The average youth will find much difficulty in following the descriptions given, and it is a pity that illustrations are not more freely given in lieu of much of the text.

Pedagogy.

The Teaching of Scientific Method and other Papers on Education. By Prof. H. E. Armstrong. xxvii+504 pp. (Macmillan.) 5*s.* net.—We welcome the appearance of this second edition of Prof. Armstrong's essays, because it shows that his stimulating counsel is receiving the attention it deserves. Since the publication in 1889 of his report on the teaching of chemistry, Prof. Armstrong has witnessed a revolution in the methods of teaching science in schools; and he may well be congratulated on the change, as profound as it has been beneficial, due very largely to his inspiration. Familiar as we are with the sound work in science which is being done in many secondary schools, and with the skill and enthusiasm of the teachers in charge of it, we cannot but regret the pessimistic tone of the essay, "Twenty-five Years Later," which Prof. Armstrong has prefixed to the new edition of his book. Things are much better than he would have his readers believe. The scientific methods of instruction he has championed so fearlessly have flowed over from the laboratory into the class-rooms of nearly every subject of the school curriculum; and there was never in this country so much real education being accomplished. The fact is Prof. Armstrong has wrought more successfully than he knows. Two new articles, in addition to the prefatory essay, are included in the present volume, which will, we hope, be bought by every teacher who cares about effective education.

Miscellaneous.

Greek Buildings represented by Fragments in the British Museum. By W. R. Lethaby. IV. Other works: The Erechtheum, the Propylaea, the Monument of Lysicrates, the Temple of Nike Apteros, the Temples of Bassae and Priene, &c. 66 pp.; 71 illustrations. (Batsford.) 3*s.* net.—We have already expressed our value for this work in discussing the earlier parts: the fourth is as good as the others, although so many buildings are treated of that each has to be done very much in brief. The drawings are quite excellent, and we hardly know whether to admire more the author's competence as an architect or his taste in interpretation and the suggestion of ideas. For the architect, indeed, these unpretending pamphlets will be very useful; for the art critic or student Mr. Lethaby has always something interesting to say, something of his own, not the opinions of other men dished up again. We recommend the book with confidence.

Grammar of the Gothic Language. By Joseph Wright. x+366 pp. (Clarendon Press.) 5*s.* net.—Prof. Wright, having completed a Dialect Dictionary which is the admiration of all scholars who know it, and unique in the world, throws off lightly first an English dialect grammar, and now a Gothic grammar. This is to take the place of his Gothic primer, now out of print; and it includes the Gospel of Mark, selections from the other Gospels, Timothy II., notes, and glossary. Some portions of these texts have the Greek text opposite. From the philologer's point of view it is impossible to praise too highly this work. It is quite admirably done; and since Gothic is indispensable to the student of English, this book should certainly be in his library. We must also commend the type and style of printing; in fact, we have no other criticism to offer.

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.

Teaching English to Asiatics.

Perhaps a few notes made as the result of my own experience in teaching English to Asiatics may be of use in answer to the letter of your correspondent, Miss Gertrude Bendelack, in your issue for May. The problem that confronts her with a class of Chinese girls confronted me when, a few years ago, I had to teach English to a class of boys made up of Chinese, Tamils, and Malays. The pupils had a large vocabulary. They spoke quite intelligibly, but their powers of writing English were woefully small. Mistakes altogether different from the English boy's mistakes appeared, and one found that the first thing to do was to discard all books written for English pupils and compile one's own rules and collect one's own examples. Here are a few suggestions which may be useful.

(1) *The use of "to be."*—Such sentences as *That house big, This fruit ripe,* were common. To remove this, exercises were drawn up where an adjective was to be used predicatively—*e.g.*, black, ink, became "The ink is black"; and so for the plural.

(2) *The use of "have."*—Treat similarly and learn the paradigm—with an object *I have, he has,* &c., *a dollar.*

(3) *The Present Imperfect Tense.*—This is a common form in conversation, and must be mastered. A list of verbs can be given, and the action they express should be performed by some pupil. He may describe his own action, the class may use the third person and describe it, and so on—much in the same way as is described by Gouin. This is such an extremely useful tense that time is well spent in learning it.

(4) *Another use of "have."*—The auxiliary use may be taught in the same way—*I am opening the door,* &c. The class will say, *He has opened the door,* and so on.

(5) *The Prepositions.*—These, of course, must be learnt from actual relations between, say, a book and a table—*on* the table, *near* the table, *under* the table. Sentences will be formed and written out, and compared with sentences where an adjective was used predicatively. I constantly heard and saw such sentences as "The book on the table," instead of "The book is on the table." In connection with this kind of statement, the very common conversational form *There-is* and *There-are* can be taught by changing "The book is on the table" to "There-is a book on the table."

(6) *The useful "of"-relation* may cause some trouble. Pairs of related words can be set to be joined; thus, the son, the king; the son of the king. The exercise may be extended by setting a list of subjects like "The price of the beef," "The Kati of salt," to be given suitable predicates. It may be pointed out here that the use of *a* and *the*, which cause no difficulty to English children, will be a source of never-ending trouble to most Asiatics, as, in the example, "a salt" is just as likely to occur as "the depth of [a] river." The English boy will unerringly insert or omit the article as required, but the Chinese will do so only after repeated effort and correction. But of this see no. 12.

(7) *One-of.*—Another useful form always to be followed by a plural noun (speaking generally). I constantly got such sentences as "One of my friend told me." An exercise may be set where the expression after *one-of* is left blank, to be filled in by the pupil. And another can be formed where the subject, "One-of-my friends," *e.g.*, is to be followed by a suitable predicate. "Many-of," "Both-of," "Each-of," &c., may be treated in the same way.

(8) *Some.*—This will doubtless cause trouble, because (apart from the meaning some-one, or some-one-or-other) the word is followed by a plural noun if the noun admits of number, and by an unchanged noun if it does not—*e.g.*, some girls; some sugar. This will necessitate exercises on the right number of the verb used. It is difficult for a Malay boy or a Malay-speaking boy to see the error in, *e.g.*, *Some tobacco are quite black* or *Some iron are soft.*

(9) *The Present Indefinite Tense.*—This tense was a source of difficulty. I frequently got *is comes* for *comes.* This in the school in question probably arose from the uninflected character of the Malay verb *Ada, datang,* expressing a variety of meanings. The distinction between this tense and the present imperfect may be shown by comparing the two meanings of the two statements, *The sun is rising* and *The sun rises,* so leading to the rule that the forms *rises, walks,* &c., express something done often, repeatedly. Sentences with blanks, producing such simple statements as "She comes to school by train" may be set.

(10) *The Negative.*—This, again, so glibly used by the English boy, is a troublesome matter for the Asiatic. There is nothing for it but to classify the various uses; *e.g.*, (*a*) with to-be, to-have; (*b*) with the imperfect tenses and other auxiliary-formed tenses; (*c*) the indefinite tenses; and then *répétez sans cesse.* (*c*) is a nuisance, because of the introduction of the auxiliary *do.* No one who has not tried it would guess beforehand the amount of work required from the teacher to get "he lives" always turned correctly into "he does not live." Not only has he to introduce the *does,* but he must get *live,* not *lives.* But "experience does it."

(11) *Like.*—I do not know whether this word is necessarily difficult to a Chinese-speaking child, but it was another *bête noire* to me. I obtained such expressions as "Some men are very like to drink whisky"; "Monkeys are very like (fond of) the durian" (a fruit); "The shape of the football like that of an egg"; and so on. It was so difficult to distinguish *is-like, likes,* and the introduction of *very, very like, and very much like* increased the difficulty.

(12) *A, An, The.*—The teacher will soon discover another monster here. "A policeman was taking a Chinaman to prison. He was holding him by the queue. The Chinaman was trying to run away." Why *the* queue, *the* Chinaman? The teacher will get, probably, "Otter can stay long time under the water." Why should it be, *The* otter, *a* long time, and not *the* water? These are simple matters that the English teacher at home wots not of. Exercises on these three words take up more room in my collection than any other matter.

(13) *Questions.*—Sooner or later the teacher of English will have to formulate rules for these. It is a most important matter, and one the seriousness of which does not appear until questions actually appear on paper. It is so easy for an Oriental to make his question understood, and his methods are so familiar, that until one sees "Where you are going?" in black and white one does not realise what a large amount of work one will have to do. The teacher, of course, will do much by carefully putting questions himself and getting them repeated. One cannot repeat too often. A boy who has for ten years been saying "*Bilakah* (when) *angkau* (you) *nanti* (will) *balik* (return)?" won't say *When will you* without constant practice. This is the kind of sentence-form that adapts itself so readily to the method of Prendergast. We get: (*a*) Verb placed first, "Is London?" "Is there?" (*b*) Auxiliary first, "Were the girls reading?" (*c*) The question-form for simple tense, "Do you come?" "Does he buy?" (*d*) Questions with interrogative words. Next, there is the troublesome negative question. Long before teachers have given rules for reported speech they will find looming ahead another prolific source of error in the reported question. But it will be best, before rules are given for this, to have the rules relating to indirect speech taught much in the same way as we teach them at home. All these rules are fully given in Nesfield.

So far only simple sentences have been dealt with. Not that it is suggested that no attempts will be made to write connected prose, but one thing must be attacked at a time. In dealing with written composition, I think it well to insist (i) on short sentences; (ii) that (at first, at any rate) they be kept quite separate. The teacher will find in addition to the mistakes, some of which have been enumerated, errors of construction similar to what one finds English boys making; *e.g.*, superfluous connecting words, double subjects, absence of connective with subordinate clauses, phrases having needless connectives, and so on. The following exercises may be suggestive—to beginners:

(1) Picking out the dependent clause in a complex sentence.

(2) Picking out connectives.

(3) Adding principal to given subordinate, and *vice versa*.

(4) Inverting order of principal and subordinate. One is certain to get a good many examples like: "When he noticed the dust was white, and he," &c. "When he saw the long ears, thinking it was an ass."

(5) Changing a subordinate clause into an equivalent participial phrase.

(6) Inverting order of clause and phrase. Note that there is, in neither case, any connecting word.

(7) Correcting sentences. This should certainly be done. We must be able to detect the particular rule broken in a bad sentence, just as we practise detecting the broken rules of the syllogism in logic.

These are only suggested exercises. They can be varied or increased according to circumstances.

There is no royal road to language teaching. And when one has to teach English as a foreign language to young pupils it is useless to attempt too much. If one aims at correct construction, as idiomatic as possible, style can take care of itself. It is best to insist on short sentences at the start, and each should have its definite form—either simple or complex—containing a subordinate clause or participial phrase. If this is insisted upon, it makes the labour of correcting infinitely less, and it is plainer for the pupil to see. It is not a bad plan, too, to separate the sentences by omitting a line on the paper. Each one then stands on its merits, and the particular fault either of connection or construction can be singled out. And as a third device, a graduated scheme of awarding marks may be used. If 100 is the maximum for the exercise, then the more serious mistakes, such as superfluous conjunctions, superfluous subject, or breach of a rule that has been recently taught, should be dealt with more severely than an error that is trifling—say of quotation or of preposition. This will tend to produce a habit of getting each sentence right before proceeding.

In conclusion, I may say I have received letters from pupils who once made all the mistakes a Chinaman could make in wrestling with a Western language, but who now, at the age of twenty, write not only grammatically, but with style and expression.

Philip A. Wood.

A Constant Pressure Gas Thermometer.

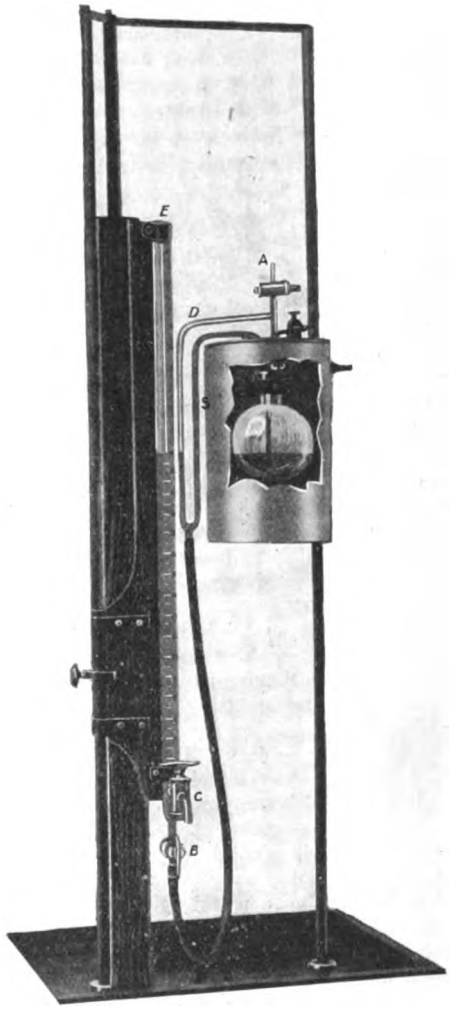
Considerable difficulties have to be faced by teachers of science both in colleges and schools in attempting a verification of Charles' law by a direct method. In many cases the law is simply established by deduction from the constant-volume law taken in combination with Boyle's law. Apart altogether from the advisability of a direct verification, more particularly as this is the form in which the law is most frequently applied, the latter method is quite unsuitable for pupils at the age when this is generally taken up in schools.

The difficulties in the way of an apparatus for a direct verification are clearly described in the following passage from Preston's "Theory of Heat," p. 129 (1894 edition):

"The great objection to a constant pressure air thermometer lies in the temperature correction which must be applied to that part of the air which occupies the stem of the instrument. This correction will always be necessary unless the bulb and all that part of the stem occupied by air are immersed in the same bath, and its influence will manifestly be more and more important as the temperature rises, and as more and more air is expelled from the bulb into the stem, so that the mass of air contained in the stem becomes comparable with that enclosed by the bulb. For this reason it is almost impossible to work with a constant pressure air thermometer, &c."

The apparatus here described has overcome those difficulties, and has the advantage of being as easily manipulated as the constant-volume apparatus.

The gas thermometer consists of a glass bulb of about 150 c.c. capacity connected by a syphon S to a graduated tube. During an experiment there is always in the bulb from 10 to 50 c.c. of mercury, which syphons over into



the measuring tube. As the gas expands more mercury is expelled, and its volume measured. A *capillary* tube D leaves the top of the bulb and joins the syphon tube lower down. This forms an excellent level indicator *outside* the heater, enabling the pressure to be accurately adjusted. Tap A serves for the introduction of the gas. Tap B opens or closes communication between the bulb and the measuring tube. Tap C is used to run off superfluous mercury.

In using the apparatus, the bulb is first filled completely and the measuring tube to zero graduation with clean, dry mercury. While extracting 100 c.c. of mercury from the bulb by means of the measuring tube, 100 c.c. of air or any other gas is drawn in over a calcium chloride or sulphuric acid drier. If, during this process, the heater

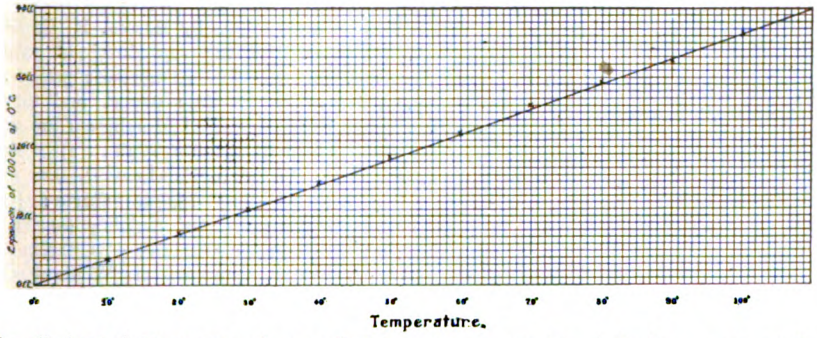
be packed with small ice, the gas is measured at 0° C. and atmospheric pressure. On heating up the bulb, readings of the gas expansion may be made at any suitable temperatures, the pressure being adjusted to atmospheric pressure with the help of the level indicator by lowering the graduated tube. The following are some readings with this apparatus for dry air:

Temp. °C.	Expansion c.c.	Diff. c.c.	Temp. °C.	Expansion c.c.	Diff. c.c.
0	0	—	60	22·1	3·4
10	3.6	3·6	70	26·1	4·0
20	7·55	3·95	80	29·4	3·3
30	11·0	3·45	90	32·7	3·3
40	14·8	3·8	100	36·5	3·8
50	18·7	3·9			

$$\text{Coefficient of expansion} = \frac{36{\cdot}5}{100 \times 100} = 0{\cdot}00365.$$

The results are shown graphically below.

For more refined work the errors of the instrument can



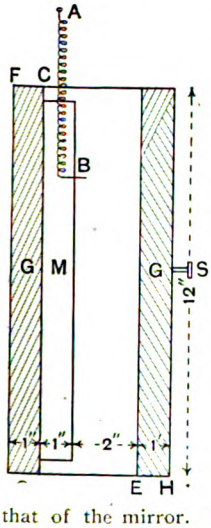
be eliminated by means of a preliminary experiment (see *Philosophical Magazine* for August, 1910). Greater refinement is, however, of no consequence in school work.

Dollar Institution, Dollar, N.B. WILLIAM MILLER.

A Modification of Jolly's Density Apparatus.

JOLLY'S method is not used in school work as often as its simplicity, sureness, and quickness might warrant.

This is probably due to the cost of the apparatus, which is usually catalogued at 45*s.*; and the following modification, made for half-a-crown, may be of interest to your readers.



CE is a wooden panel bearing a mirror M. It slides freely between guides G upon a second panel FH secured to the wall of the laboratory. S is a screw by which the slide may be fixed in position. AB is a spiral spring of sensitiveness at least 1 cm. to 3 gm., and its pointer B lies in front of the mirror, projecting about ½ cm. beyond the glass to the right.

To show that the upthrust of a liquid upon a solid is proportional to the weight of liquid displaced, the apparatus may be used as follows. A piece of plasticene is attached by thread to the spring. A slip of sq. cm. paper is pinned upon the slide, with its edge to that of the mirror. The plasticene is now surrounded by water, and the position of the pointer marked zero upon one of the vertical lines of the paper, parallax being avoided by using the mirror.

A cm. cube is now embedded in the plasticene so as to increase by 1 gm. the weight of water displaced. The upthrust *from the zero* is again found, being marked off upon the next vertical line on the paper. Cubes of *any* material are added, and the experiment repeated. The slide is now removed, and the graph of upthrust with weight of water displaced is drawn and compared with that which is found to be described when 1, 2, 3, . . . gm. are attached in air to the spring.

For the sake of confirmation, a cm. cube is attached to the plasticene, and a gram weight to the thread. The plasticene and cube being surrounded by water, the upthrust from the zero is found to be *nil*.

The apparatus is now used to determine density. The plasticene is removed, and a stone, say, is hung from the spring. The zero line is brought to the pointer, the stone lifted by the hand, and the upthrust read off on the paper. The hand is removed, the stone surrounded by water, and the upthrust again determined. The distances moved by the pointer being, say, 15·3 cm. and 6·0 cm., the relative density of the stone is 15·3 cm. ÷ 6·0 cm. = 2·55.

J. D. PETERKIN.

Dollar Institution, Dollar, N.B.

Measuring Angles in Geography Lessons.

IN the teaching of practical geography there is always the serious difficulty of getting instruments at a reasonable price to measure angles in a horizontal and vertical plane. Perhaps your readers may be interested in instruments I have devised for the purpose, and am now using. For horizontal angles I use a modified form of the prismatic compass. In place of the prism I use a small plane mirror with a vertical line scratched down the middle of the silvered surface. This lies flat when not in use. The mirror and sight are fastened to a small frame, which can be slipped on or off the compass. The compass card is 3 inches in diameter, and graduated in degrees. In use the mirror is raised about 45°, and the sight is vertical. When held at about a foot from the eye, the line on the mirror and the wire of the sight appear to coincide, and at the same time to cut the distant object, while the scale is seen reflected in the mirror cut by the black line. This ensures great accuracy in reading, while it avoids straining the sight by looking through a small hole or slit. At the same time, no fine adjustments are necessary.

To measure vertical angles I use a clinometer, which consists of a circular card revolving on an axis like a wheel enclosed in a box exactly the same size as the compass. The card is graduated from 0° to 90°, and back again to 0° on each half. One 90° is weighted, so that the line 0° 0° is always horizontal. The sighting apparatus of the compass is slipped on to the box, and the required angle is read off as before. By using the shadow of the sight, the sun's altitude can be read to the nearest degree, and with the help of a bicycle lamp the north polar altitude of a star is also measured. The three instruments are made for me by Mr. W. G. Pye, Granta Works, Cambridge, and cost about £1. I have obtained very fair maps of the school premises showing the contours of the hill on which the school stands. Readings accurate to one degree are near enough for schoolboys, and the instruments being portable can be used by the cadet corps.

Bristol Grammar School. F. BEAMES.

Determination of the Density of a Powder.

IF an insoluble powder such as fine sand or whiting be shaken up with water in a tall vessel and a hydrometer placed in the mixture, a reading greater than unity is registered on the hydrometer. As the powder subsides the readings of the hydrometer decrease. For fine powders the decrease takes place slowly, but with sand the observation of the maximum reading must be made as quickly as possible, as the sand very soon begins to sink. The maximum density recorded by the hydrometer will be found to agree, within the limits of observation, with the mean density of the liquid as determined by weighing a known volume of the mixture.

This experiment might be applied as a method for determining the density of a powder by mixing known weights of powder and water, and then finding the density of the resulting liquid, as indicated above.

Below are given results of determinations made with whiting. Weighed quantities of whiting and water were mixed in a half-litre measuring cylinder, and a hydrometer quickly placed in the liquid. The reading was taken before the powder commenced to settle.

Suppose the density recorded by the hydrometer to be d, and let the weights of water and powder be W and w respectively.

We then have the following equation:

$$W + \frac{w}{d} - W = \frac{w}{s},$$

where s is the density of the powder.

Determinations:

(1) Weight of water ... ... = 500 grams
,, whiting ... ... = 100 ,,
Hydrometer reading... ... = 1·099
$s = 2{\cdot}18$.

(2) Weight of water ... ... = 400 grams
,, whiting ... ... = 50 ,,
Hydrometer reading .. ... = 1·063
$s = 2{\cdot}15$.

The density of whiting determined by sp. gr. bottle was 2·20.

CHARLES F. HOGLEY.

South-Western Polytechnic, Chelsea.

Shortcomings of Mathematical Tables.

Is a separate table for complementary logarithms necessary? They can be read off the ordinary logarithm tables by the following simple rule. Change the sign of the characteristic and subtract 1, then make up every figure of the mantissa to 9, except the last, which is made up to 10.

P. M.

I HAVE heard of the method used by "P. M." for writing down complementary logarithms being used by some teachers with their classes; but surely this means that they perform a process of subtraction mentally every time they use a table of ordinary logarithms for the purpose, so that if three factors occur in the denominator of a fraction, three subtractions and one addition have to be performed. *Chacun à son goût*; but personally I am constantly using Bottomley's complementary logarithms, while much of the information contained in books of tables is never required from year's end to year's end.

While on the subject of tables, may I point out that it would be a great advantage if different tables had some distinctive features, either in the type or in the arrangement, which would enable them to be distinguished at a glance? When one is in a hurry there is some risk of turning up a table of cosines in mistake for one of sines.

G. H. BRYAN.

The Federal Capital of Australia.

I HAVE lately had occasion to examine a number of geographies either newly written or in new editions alleged to be brought up to date. In every one in which the Federal capital of Australia is mentioned, it is said to be Dalgety. May I use your columns to remind teachers or others that the Federal capital is *not* Dalgety, but Canberra? The March number of the *Geographical Journal* contains maps based on maps and plans issued by the New South Wales Government, which show (i) the position of the Federal Territory, (ii) the Federal Territory itself, (iii) the site of the Federal capital.

AUSTRALIAN.

Pictorial Aids to the Teaching of History.

I REGRET that in my article on "Pictorial Aids to the Teaching of History" in last month's issue of THE SCHOOL WORLD, I omitted to mention one useful and important series of pictures, viz., those issued by Mr. Edward Arnold, of Maddox Street, London. There are twelve pictures in this series. The originals were drawn by Messrs. R. Caton Woodville and A. Forestier, and the reproductions have been made by means of the excellent Rembrandt process. The plates are printed on fine art-plate paper, and they measure 32 inches by 24 inches each. The subjects are as follows: (1) The Building of Hadrian's Wall; (2) King Alfred's First Sea-Fight; (3) Harold's Last Stand at Hastings; (4) King John sealing Magna Carta; (5) Queen Philippa saves the Burgesses of Calais; (6) The Wars of the Roses; (7) The Spanish Armada; (8) Charles I. going to Execution; (9) The Landing of William of Orange; (10) Wolfe scaling the Heights of Abraham; (11) Nelson at Trafalgar; (12) Waterloo: the Struggle at Hougoumont. Each plate can be obtained for 2*s.* 6*d.*, or the twelve in portfolio for 35*s.* These beautifully executed pictures may be cordially commended to those who prefer uncoloured to coloured illustrations of historic incidents. To accompany the pictures there is published a convenient little book of "Notes for Teachers" (price 2*d.*), in which attention is directed to salient features.

F. J. C. HEARNSHAW.

Hartley University College, Southampton.

The School World.

A Monthly Magazine of Educational Work and Progress.

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TESTING INTELLIGENCE.

By J. L. PATON, M.A.
High-Master of the Manchester Grammar School.

HERE are some two hundred and fifty boys, all of them under thirteen years of age, practically all of them boys of good character, keen-witted and aspiring. They are the pick of some hundred public elementary schools. They are all personally unknown. The problem is how to select from this large number the ablest boys, those who have the best brains and the greatest capacity for intellectual growth. Many are called but few are chosen. We have to select twenty-five out of 250. How is it to be done?

At present they are all writing for their lives. They have had an extract from an essay of Sir Arthur Helps served out to them, and ten minutes given them to peruse it quietly by themselves. The printed slips have just been collected, and the young aspirants are hard at work "reproducing the substance of the argument." They are like a bunch of runners starting on a two-mile race—who are the likeliest lads to be left in at the last lap, who are the boys with power and stamina, with "grit and go and gumption"? That is the question.

Are we going to rely entirely on the results of the written work? Clearly we have here a definite test—we can give so many marks for the thought-substance, deduct so many marks for each case of bad spelling, bad sentence construction, or faulty punctuation. Also, we can test their knowledge of gammar, of arithmetic, of history and geography; we can also gauge their powers of general observation and *savoir faire*. We may take this written examination as a basis. On the strength of it we may weed out probably some 60 to 70 per cent. and say definitely of them they are not up to standard. But we do not feel at all satisfied to take the first twenty-five boys on the list of marks, draw the line below them, and assign our scholarships or our free places to them. To begin with, the difference between No. 25 and No. 26 may be only 1 per cent. on the total, or even less, and I never yet met an examiner who was prepared to guarantee his results within 1 per cent. Further, when we take into account the difficulty that small boys have in manipulating a pen, the difficulty they have in deciding which questions they shall select to answer, and all the hundred distractions which come between them and their work in a new place and amid novel surroundings, we cannot trust ourselves to say that the written work is an adequate and final test. Again, directly we begin to look over their work, we are struck with the extraordinary difference made by their hitherto training. Here is a boy who starts upon his English composition with all the facility and self-assurance of a halfpenny journalist: he writes an essay as easily as he eats his breakfast: he has been trained to express himself on paper and to formulate his thought. Another boy makes nothing of his composition, and yet, if one speaks to him, one finds that he has plenty of ideas and is neither slow nor awkward in expressing them by word of mouth. He has the *usus loquendi* but not the *usus scribendi*. Very likely he comes from a poorer school, where the classes were larger, and he has not had the same chance as others of practice in paper work, nor has he had, either at home or at school, the personal supervision and help and stimulus which count for so much. Yet he, too, may be a potential wrangler or a Balliol scholar. If we miss him, we fail in our duty not only to the boy himself, but also to our school and to our country, which is calling for trained intelligence and giving yearly increased grants to secure it.

If we are to discover the potential wrangler, there must be a *viva voce* examination to supplement the written test, and that *viva voce* examination must be personal. It cannot be done on a large scale: the boys on our select list must be interviewed one by one. We must set ourselves to draw the lad out, see what he has in him, what skill, what interests, what talent, and what energy of mind, for experience teaches every schoolmaster that it is not so much cleverness and ability which enable a lad to do well as power of perseverance, determination of character, and mental stamina.

How is this personal interview to be managed? The first thing is to put the candidate at his ease. Each timid little fellow that comes into the room we must regard as an oyster which has to be opened. Give him first of all questions which practically answer themselves. What is his name? How old is he? What school does he come from? You have all these items already supplied on your

paper, but that does not matter. It is not a waste of time to ask all this over again, for it gives your little candidate possession of himself: he begins to feel his feet. It is helpful, too, if you can slip in some further little query, "Does he know Mr. So-and-So?" "Has he been to such-and-such a place in his own neighbourhood?" If he gives his Christian name as Bernard or Horace, "How does he come by that name?" If he got it from an uncle or a grandfather, how did his grandfather come by that name? What great man was there who bore that name, and what does he know about him? These questions as to name and neighbourhood and acquaintance open the door into some of the inner chambers, especially if one can lay aside one's pedagogic, do-as-you're-told tone of voice, one's professional manner, for the nonce. The tone of voice counts for more than is usually realised.

The next thing is to give him a passage to read. If there is some play of Shakespeare he has read, or some poem of Tennyson that is not too simple, this will serve the purpose well. Take, for instance, such a passage as John of Gaunt's speech in "Richard II.":

> I thank my liege that in regard of me
> He shortens four years of my son's exile:
> But little vantage shall I reap thereby;
> For, ere the six years that he hath to spend,
> Can change their moons, and bring their times about,
> My oil-dried lamp, and time-bewasted light
> Shall be extinct with age and endless night;
> My inch of taper will be burnt and done,
> And blindfold death not let me see my son.

The lad who reads that passage with appreciation, who can bring out the meaning of the metaphors and show the appropriateness of such an epithet as "blindfold" is certainly a boy to consider; he has some promise of literary quality. The passage which immediately follows these lines is perhaps even better as a test of literary sense.

But we want to probe further. What is his favourite subject at school? Why is it that he likes that subject best? If he says he likes history best, which was the best king of England, and why does he choose him out as the best? Who is his hero? and what are the qualities of his hero which make him "heroic"? If it is science, then why is it that plants have flowers? and why is it that flowers have such bright and varied colours? What has he learned about comets recently? Why is it that Halley's comet comes round again and again, and we can tell when it is coming, while other comets bob up unexpectedly and are never seen again? How is iron rust different from iron? When does a piece of iron weigh heavier—before rusting or after rusting?

Say his bent appears to be towards practical engineering or mechanics of any kind, then we may ask him a question of this kind: Here is a room 32 by 21 feet, and I want to put into it as many motor-cars as I can; each motor measures 15 by 7 feet; how many motors can I put into the room? The question should be accompanied by a rough ground-plan, both of room and motor-car, for the boy to have before his eyes. The odds are that the boy will multiply 32 by 21 and 15 by 7, and then figure out how many times the smaller product "goes into" the larger. After some mental arithmetic he will answer, "Six and forty-two hundred-and-fifths," or possibly, "Six and two-fifths." But the boy with real, quick, practical instinct will see at once that it is not wholly a question of area; it is a question of packing, and he will tell you quite readily that the garage will hold six motor-cars, and show you how you are to pack them in. Vulgar fractions of motor-cars he will discard.

I have found the geometrical problem of Plato's "Meno" a very useful test question for a boy who shows an aptitude for geometry. If on a line one inch in length I get a square which is one square inch in area, show me the line which will give me a square which is two square inches in area. Few will give the answer right off, but you can tell much about a boy's "uptake" from the way he allows himself to be guided to the right solution.

We may ask about his hobbies. The chances are ten to one that he is a collector, and nine to one that he collects stamps. What can he learn from looking at a set of German stamps about Germany, its government, its history, its language, its money system? Or, say the collection is picture postcards. On what principle does he arrange his collection, and what does he learn from it?

There will be a certain number of lads from poorer elementary schools who will not show much gleam of intelligence on such questions as these, and yet they will have a quickness in their eye and a mobility of face which shows they are all alive. They strike one as boys who, in Baden-Powell's phrase, "keep their eyes open and think." We must give these lads also a chance to show what is in them. They usually have a sense of humour, and it is worth while to ascertain. Give such a lad an advertisement which would be better of being "said otherwise"—*e.g.*:

"A life assurance company invites applications for agencies from gentlemen with good records for taking lives."

"To be let, good baker's shop; large oven, lived in it many years. Satisfactory reasons for leaving."

Almost any newspaper will supply instances.

Are these advertisements satisfactory? If not, what is wrong? How could he express satisfactorily the meaning which the advertiser wishes to convey? What is a life assurance company? What does it want agents for? What would be "a good record for taking lives"?

What is it which makes a match strike on the box? Why does an electric car move? Would electricity make a lurry move or an omnibus, if it were applied to them? If not, why not? Why is the name of the tramway manager painted on each car? Who paved the streets? Who paid for it? How did they get the money to pay?

Why is the Liverpool Cotton Exchange closed on July 4th? Why is a penny round? Why is a penny stamp not round? Why is a pillar-post or a telegraph post not square? A gentleman was asked what family he had. His reply was, "I have six daughters, and each daughter has one brother." How many children were there?

Again, our great object is to discover a lad who has looked deeper than the mere appearances of things, who has got down to the causes, who has compared one thing with another and seen the reason for resemblances and for differences. We want, if we can, to get a lad like this into an argument, and see how he acquits himself.

In this regard, we must not be afraid of politics or the burning question which is uppermost in the newspaper world at the time. Why are prices so high at the present time? Why is there so much unemployment? Would it be a good thing to give the women the vote? Through some such burning topic as this our young aspirant ought to be drawn out. He will probably be keen on the subject of Socialism or Tariff Reform. Ply him hard with questions. See if he has verified the statements he has heard or read; if he can substantiate his arguments; above all, whether he can "keep his end up" when the bowling is rather dodgy.

Some such process as this which I have described is necessary nowadays if we are to make a right selection among the public elementary school candidates who compete for free places. We are not allowed to examine them on paper on any subjects beyond English and arithmetic. But even in these elementary papers, as every examiner knows, almost everything depends upon the school from which a lad comes and the practice he has had in tackling written questions, whether in English or arithmetic, which require thought. The selection ought not, however, to be according to school; it ought to be according to intellectual calibre and promise. In estimating this, a considerable fund of ingenuity and resource is required from the examiner, and the result of his *viva voce* test ought, in my opinion, to count fully as high as the result of the written examination. If I may make, in conclusion, two or three practical suggestions begotten of experience, I would say: Examine each candidate separately; leave at least a quarter of an hour for each; never attempt to take more than ten at one sitting; for as soon as the examiner loses his freshness and joy in the work, his results are no longer worth much. And there are few kinds of work so exhausting to one's own intelligence as testing other people's.

Tommy's Adventures in Nature Land. By Sir Digby Pigott. xvi+180 pp. (Witherby.) 2s. 6d. net.—We have already commended the author's charming nature story "The Changeling." The present book, recounting the further adventures of the hero, is marked by the same happy combination of sound natural history, literary skill, and dainty fancy, and ought to become equally popular with boys and girls. It contains a number of spirited illustrations by the author and Mr. A C. Gould.

VARIANT TYPES OF CURRICULA IN SECONDARY SCHOOLS.

By SARA A. BURSTALL, M.A.
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THIS matter has now become one of urgent practical importance, owing to two phenomena in modern secondary education. The first is the pressure on the time-table, arising from the introduction of new subjects, as, for example, the modern type of geography and of handwork, and in girls' schools, Latin and mathematics. Thus everywhere the curriculum is crowded, and pupils are in danger either of overwork, or superficiality, or that dissipation of interest which means that no permanent taste for intellectual things is left when school days are over. The other fact, which has become evident since the recent enlargement of secondary schools, and the opening of many new ones, is the early age at which pupils leave, before they have completed the course of study. Thus large sums of public money are spent in the new council secondary schools on pupils who receive only a year or two of secondary education, which is neither a finish to their previous education nor a foundation of a later structure. Some special pupils, of course, are obliged to leave school prematurely through the need of earning a living; a thoughtful parent will see that if these pupils could remain in school two or three years longer, and be taught something of direct practical value, they would be able to earn a better living in a more highly specialised occupation, and would be better paid.

To overcome these two difficulties we must revise curricula, must modify the too academic character of secondary education, and must provide variant courses of study for different types of pupils. The nations whose secondary education is at a further stage of evolution than ours have had to do this: Germany with its *Realschule* and *Oberrealschule*; America with its elective courses or its manual training and commercial high schools; Switzerland, where one may see the modern side of the secondary school highly developed, as, for instance, in the Höhere Töchterschule in Zürich. These schools are in close contact with the life of the community; the pupils in them feel that they are working for something definitely connected with their future, something that is of real use, and so they work more earnestly, and they and their parents are willing, nay, often eager, that the pupil should remain until the end of the course of study.

But, it may be said, such considerations are unworthy of those who believe in a liberal education. The answer is that such courses of study may be made to contain the elements of a liberal education, especially by emphasis on literature in the mother tongue and history. It is often found in practice that the training of faculty, which is one purpose of a liberal education, can be secured more completely for certain pupils through subjects other than the time-honoured disciplines of

Latin and mathematics. People are not all built the same way; one boy may learn accuracy from carpentry as he never could from Latin or French grammar. A girl of a certain type may gain from the discipline of learning shorthand the same exercise and training of faculty as her cousin gains from mathematics. It is a question of how the subject is taught, not so much of the particular subject, of the teacher most of all, and perhaps almost as much of the needs and tastes of the particular pupil.

We do not mean to advocate "soft options"; we only mean what the old proverb says: "What is one man's meat is another man's poison." Broad beans and cheese are most nutritious and savoury foods, to those who can enjoy and digest them; there is nothing better for many folk than beef and mutton; but we cannot all be nourished on a dietary of either the one or the other. So it is found in practice that the old fortifying classical curriculum, or even the general course of liberal education followed in the examination forms of a girls' high school, cannot be assimilated by all pupils. If it is put before some, they either go without, that is, do as little as they can, and learn nothing really well; they suffer from mental indigestion, that is, break down; or, thirdly, they leave the table, that is, they do not remain in school.

It has been found in practice that the provision of different courses of study adapted to individual needs will induce pupils to remain longer in school, and will add new interest and new vigour to their work. The time at which such courses should begin is, roughly speaking, fifteen years of age; there must be some central core, as it were, of general education, which must be the same for all. The present writer would not include many subjects in this: English, with history and geography, and in general Scripture; elementary mathematics, very elementary for some girls; sound science, sound so far as it goes, and not specialised; handwork, singing, and other forms of physical education. In most cases there would also be at least one foreign language, though not necessarily Latin. In the three years between twelve and fifteen it is possible to lay a sound foundation in all these different branches, if too much is not attempted.

The actual selection of the things taught, and the proportion of time given to the different sections of the work would vary considerably from school to school. In a boys' school, for example, where the leaving age is sixteen, much more time must be given to mathematics and science, while in a girls' school with the leaving age eighteen, a greater number of things can be learnt, and much better history can be done. Exactly where the variant courses should begin depends a good deal on the particular pupil, and on the leaving age of the school, and also on the type of education the children have received; for instance, in the ordinary girls' high school, where the pupils may have come in for the most part about ten, one can count on five or six years of general education before the special work is begun, and the cleverer girls, at least, will have learnt two languages and have a fair elementary knowledge of science. Roughly speaking, the special course should run from fifteen to seventeen, or sixteen to eighteen years of age in the case of girls, and should, in general, be two years in length.

Undoubtedly the most important of such special curricula for girls is the housewifery course, which those who wish can take at the end of their school career; probably it could only last one year in schools where the leaving age is sixteen, but this is better than nothing. It should include English and history (social history is in practice found the most interesting), household arithmetic, and, in general, one or even two modern languages, though no girl should begin a modern language at this stage; she should only carry on the things which she has already started. The greater part of the time would be given to the technical subjects: to domestic science, that is, elementary physics, and chemistry, with a bias to household matters, and coloured as to its experiments, and the parts of the subject studied, by the needs of the household; cookery and some form of needlecraft, and probably easy dressmaking in addition to ordinary sewing. Laundry has been found most successful, at least what might be called "blanchissage de fin"; a higher degree of skill in this can be learnt by schoolgirls than in cookery, which is really a very difficult art, needing much practice. Hygiene should, of course, be included, and first aid, if desired, and some lessons on the care of infants at the end of the course.

Such a type of secondary education is now successfully followed in a good many girls' schools. What it needs is, for some University Examining Board to establish a certificate of proficiency in the subjects studied corresponding with the academic matriculation certificate. So far, girls who have to earn their own living have not, as a rule, entered on this course of study, since it does not tend directly to paid work. What is necessary for this is that housework should be made a dignified and attractive profession for educated girls, as sick nursing already is.

This housewifery course is probably required in most girls' schools. There is another choice found useful in day schools of large cities, such as Zürich, St. Louis (U.S.A.), Manchester, Leeds, Bristol, and local capitals like Exeter; this is a commercial or secretarial course. In Zürich 200 girls follow this, which is largely specialised for the needs of those clever Swiss women who manage hotels so beautifully; the course which already exists in one of the Bristol schools for girls is a rather different thing from the secretarial course in the Manchester High School. This variant type requires at least two years; good English, shorthand to the highest possible degree of efficiency in the time, correct and accurate typing are necessities; the amount of arithmetic and book-keeping required depends on the particular school. If the girls have had a good pre-

vious education, have (say) been in the high school since they were nine or ten years of age, they should be able to do good foreign correspondence in French or German, or both, and they can very well begin Spanish when they enter the special course of instruction, since it is a language that can be learnt quickly; there is no time for science or mathematics, and hardly even for drawing, though this would be desirable. The better general education the girl has had before she enters the department, the better she will do, and the more remunerative will be the work which she can undertake when she leaves school, and the ultimate position to which she can rise. The ideal way would be to have this course running from seventeen to nineteen years of age, and corresponding with the lower and upper sixth forms; when girls of this calibre take the work, they do very well.

The present writer is not aware of any other variant types in girls' schools, though there are, of course, special opportunities for music, art, modern languages in certain schools, more especially the private boarding school. It is interesting to notice that in so sound an institution as the Zürich Höhere Töchterschule, there is such a course of study definitely recognised, with a great deal of literature, languages, history and art, and the like. One dreams of two other variant types which might be developed in particular places. The first might be that for rural economy, and should be found in schools in Worcestershire, Devon, Surrey, or East Anglia; it should be for the country girl, who may or may not earn a living. The school work would become much more real to her, and therefore more thorough, if it were specialised in the direction of her interests. The technical side might be represented by gardening only, in which some schools already do good work, and the care of certain animals; but its main intention would be to secure vivid interest and sound work in botany, zoology, elementary chemistry, and the scientific basis of rural economy. The literature and art, which should form a compulsory part of the course, should be practically directed to encourage the ideals of rural life, to arouse and strengthen sympathy for it, and appreciation of its true charms. Such a course would be much less elaborate, less thorough, than that of a college like Swanley or Reading; it would include more of general education, would be directed to arouse interest and give elementary knowledge only. It would be very much cheaper, and would be useful to girls who would never be able to proceed to places of higher education.

In London, where there are many opportunities for an artistic girl to earn her own living, or in centres like Birmingham, where there is hereditary skill in art and craftsmanship, one would like to find in some girls' secondary school a special course of arts and crafts, from, say, fifteen to seventeen, which should lead on to the technical college. Much time would, of course, be given to drawing and painting; if possible to some other forms of handwork. English literature and history would be specialised in the direction of art, and the modern language teaching might also be specialised, the German class, for instance, reading such a book as Lessing's "Laocoon." There would be little, if any, time for science; botany, for the sake of the study of plant form, would be the one chosen, if any; the mathematical work must be carried on through geometry, both practically and theoretically.

These are, however, but dreams; only by experiment could one find out exactly how to organise such a course. Boys' schools have already, under the pressure of preparation for practical life, done something in organising special courses. One has heard of a systematic preparation for engineering, of a year of preliminary scientific work for medicine taken in the school, of schools, in places like Hull, for boys who are going to sea. One might venture to suggest that a certain type of boy, who gets very little good now from a grammar-school education, might do much better and remain much longer in school if he and his fellows had a specialised course with mathematics—practical as well as theoretical—handwork, science, geography, drawing, and very good English and history. It would be very desirable if such boys could aim at a *reading* knowledge of German or French, but here, again, only practical experience can solve the problem.

The main argument for all these alternative courses of study is national efficiency. As things are, with possessions like India to govern abroad, and the industries by which we live to carry on at home, with a falling birth-rate among the middle classes, and a demand greater than ever for capable people, we cannot afford to waste the time and the abilities of a single boy or girl in a secondary school. If we are to survive in the great international struggle for existence against the competition of nations like Japan, Germany, and the United States, we must improve our methods and schemes of education, making the best of that power and energy which English boys and girls still possess, if only they can be induced to use them.

GERMAN SCHOOLS—A NATIONAL SYSTEM.

By THOMAS F. A. SMITH, Ph.D.
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IT is a curious anomaly that the English working classes contribute little in rates and taxes to the commonweal, yet the State relieves them of all cares in relation to the education of their children. The middle classes, on the other hand, bearing heavy burdens in both direct and indirect taxation, get hardly any educational advantages provided for their children by the State as a sort of discount on their contribution.

Putting aside for a moment the £ *s. d.* of the question, and taking for granted John Knox's

dictum that every educated individual added to the nation is an addition to its wealth, one naturally inquires, "What is the State doing to increase this source of national wealth?" Or, to adopt the language of psychology, What national apparatus exists for the creation of intellectual units, or for the transformation of "objects" into subjects? Whether Carlyle's judgment of "thirty millions—mostly fools!" is a truism or not, the question as to what is being done to raise the fools (the "objects") to the dignity and value of intelligent beings and cultured citizens is one of unlimited individual and national importance. This is much more so the case when the nation in question is a world power with unexampled opportunities for colonising and civilising. Apart from its power to implant its culture on other peoples, the idea of self-preservation must also be kept in view. If the survival-of-the-fittest doctrine has its equivalent in the intellectual world, then, in face of the present struggle for existence between the great nations of the world, surely that power which deputes the task of furnishing its "intellectualised material" to irresponsible private individuals is taking grave risks for its future.

Leaving out our elementary schools, England has nothing to show in the way of *national* educational institutions. The public schools were founded avowedly as class institutions, and such they remain. Even the universities—especially the older ones—could by no stretch of the imagination deserve the epithet "national." By national the writer understands institutions which have the present and future national reputation in their keeping, are representative of, and supported by, the nation; hence open to any unit of the community. In applying these standards it is only necessary to point out that the want of means excludes the great majority of individuals from England's best educational institutions, and in the majority of cases "humble birth" is sufficient reason for closing the door to an applicant. Further, if the number and quality of the intellectual units possessed by the single nation is a factor in the competition between civilisations and cultures, then England's greatest rival holds a tangible advantage.

At present there are 50,000 students in German universities, compared with England's 25,000. The advantage does not rest here, for every year her secondary schools turn out a greater number of well-educated youths than do the English—young men who, according to Matthew Arnold, possess an education equal to a pass degree of Oxford or Cambridge. Either for good or ill Germany is committed to intellectualism, but whether this was a conscious or only a haphazard development in her history will be a question for future historians. Here let it suffice to say that she possesses an educational apparatus deserving almost in its widest sense the designation "national" as defined above. The elementary schools are entirely supported by public moneys; they feed the secondary schools, which in their turn feed the universities. The two latter are kept up almost entirely from the public funds, and in any case they are within reach of the sons of the masses. In every one of Germany's twenty-two universities there are hundreds of such young men representing the masses—students who will compete in life with the classes, thereby raising the all-round standard of intellectual efficiency.

The first broad conception which it is absolutely necessary to realise clearly is that the elementary, secondary, and high schools (universities) form an organic entity, each based upon the preceding stage in the development of the individual. The secondary school demands that the lad shall have spent four years in an elementary school before he enters the former. Many *Mittelschulen* have a *Vorschule* attached to them, in which case three years' elementary work suffices. This makes the age of the lad on commencing the second (or last) stage of his education either nine or ten. Finally, the universities hold no entrance examinations, but require that would-be students must have passed through a nine-class secondary school, and passed its final examination—the *Absolutorium*. His certificate to that effect is a *Reifezeugnis*. There is no royal road to the universities—every German who wishes to make an academic career, and through that enter one of the learned professions, must have a *Reifezeugnis*. It is not impossible for the better classes to avoid the elementary school, but no man can get to the university without having spent nine years in a *Gymnasium, Realgymnasium,* or an *Oberrealschule.*

By this simple organisation education is raised almost entirely out of the realm of caste. In the world of letters social distinctions receive the least possible acknowledgment, thus encouraging parents of all classes to strive to enter their sons for the intellectual race. The universities are thereby freed from the troublesome paraphernalia of "Little Goes," "Responsions," &c., and better able to follow their true pursuits. Besides, parents are delivered to a great extent from the most perplexing question of finding ways and means to make their boys into something or other. Who has not heard "What on earth shall I do with my son?" When, however, the average Englishman has arrived at a decision, that man's worries are only about to commence; for to find the way—the right schools—leading to the goal desired is a problem of alarming difficulty in the chaos of good and bad schools recommended by friends and agents, or which invite him in prospectuses and advertisements to try their educational nostrums. We all know about the inquiries made in such cases, and we know how only too often the youth is bandied about from school to school, and from "coach" to "coach," until he scrambles into a university or a profession. Germany in building up a remarkable system of secondary schools, each leading to definite ends, has simplified the parents' choice, reduced his expenses to a minimum, and

made the pupil's path as short and straight as it is humanly possible to do so, besides stifling every "quack" school out of existence. In both England and France schoolmen are given to shouting the excellence of their wares, but the German schoolman has no occasion to descend to those methods.

The net gain of all this is that parents have absolute confidence in having their children educated. They have the fullest guarantee that the path chosen is the best to attain the goal aimed at, and in most cases the absolute assurance that it does lead there. A German lad who has passed through six classes of a secondary school has gained exemption from two of his three years' military service, and is qualified to enter certain technical schools or to enter into the Civil Service. The young man who passes his *Absolutorium* knows that he can enter any inland and many foreign universities. The Army and Navy accept him (other things being equal) without further ado; besides which, some of the higher branches of the Civil Service are open to him. In a word, German schools lead to some definite goal, while each and every English secondary school is a *cul de sac*—the bottom houses of which are populated by University, Army, Navy, and Civil Service "coaches."

In 1905 Germany had 1,153 secondary schools, staffed by 18,430 teachers and attended by 354,000 boys. Many of these schools are private and municipal, but the regulations governing them are the same, and the curriculum is uniform in all schools of the same type. This is not strictly true, as in different States slight variations may be found from the Prussian models. Prussian returns for this year show that she alone has 719 secondary schools (an increase of 163 during the last decade). The total cost was £3,600,000, of which two millions came from the public funds, one and a half millions from school fees, and the remainder from endowments. At present 223,000 pupils are in these schools, which shows an increase of 41 per cent. since 1900, but during the same period the population has only increased 15 per cent. German middle schools fall naturally into two classes: those with nine and those with six classes. Promotion only takes place after a full year spent in the class. There are three types, viz.: *Gymnasien,* distinguished by a nine years' Latin and a six years' Greek course, together with seven years of French; *Realgymnasien,* having a nine years' Latin course with courses extending over seven and six years for French and English respectively; *Oberrealschulen,* which have a seven years' English and nine years' French course. Each of these types has its sub-class, in which the instruction ends with the sixth year. Similarly a lad may leave the *Vollanstalt* after passing through the sixth class.

A quotation from the annual report of the "Karlsruhe Reformgymnasien" will show more exactly how the schools are linked up to the public life. A pupil is qualified:

After the fourth year to join a school for building or similar special school.

After the fifth year to enter the post and telegraph services.

After the sixth year to serve only one year in the army, and may become a clerk on the railway or in law courts and other administrative departments; military clerical service is open to him, or he may proceed to study at a technical high school.

After the seventh year to enter the land-surveying service; to study for the profession of dentist or apothecary; to become a clerk in the imperial bank; to take a clerkship in various Government offices; or to present himself for the special examination for the Army or Navy.

After the eighth year to procure secretaryships, &c., in still higher Civil Service branches.

After the ninth year to proceed to any university and prepare himself for any of the learned professions; the schools of forestry, engineering, &c., are all open to him; certain other branches of the Civil Service are now accessible.

These are the privileges granted in a small State like Baden; in the larger States the openings are considerably increased. On this point the writer desires to lay great stress—the linking up of the school to the public life—as one of the factors which induce Germans to educate their sons to a much higher standard than we do ours.

Furthermore, the cost of education is a not unimportant factor which influences its penetrating power downwards through the social strata. In Bavaria the secondary-school fees are £2, in Baden £3, and in Prussia £5 to £8 per annum.[1] Considerable numbers of lads receive "Stipendien," and parents can be nearly certain that if they bring proof of straitened circumstances the fees will be largely or entirely remitted. One has only to peruse the lists of *Abiturienten* leaving any German secondary school to obtain convincing proof that a large percentage of the young men come from quite humble families, which could never have given their children more than an elementary education in England. Three instances will suffice to illustrate the point.

Nuremberg Realgymnasium, 1910: 38 *Abiturienten,* of whom 16 are the sons of postmen, innkeepers, clerks, teachers, artisans, &c.

Erlangen Gymnasium, 1910: 36 *Abiturienten,* 17 sons of small tradesmen, post and forest officials, teachers, &c.

Goethe Gymnasium, Frankfort, 1907: out of 38 *Abiturienten* 19 from the lower middle classes.

These examples are taken haphazard from the first reports to hand, but the percentage would hold good for all the *Gymnasien* and *Oberrealschulen* of Germany. If we made a similar calculation for lads finishing their education after the sixth year, the percentage of boys leaving school then would probably be 95 per cent. from the humbler classes.

The large proportion of *bourgeois* in German middle schools (and among university students)

[1] In vol. xx. of the "Board of Education's Special Reports" Mr. J. W. Headlam states that these fees are high, but the writer is unable to agree with him. The same *quality* education can seldom be obtained in England, and then only at an enormously increased cost.

is a factor entirely overlooked by the headmasters of Marlborough and Manchester Grammar School, as well as by Mr. Headlam in the report already mentioned. The last-named, writing on the work in classics, says: "It is, however, it seems to me, work quite beyond what we could ever hope to get in ordinary forms in ordinary schools." [1]

Considering that it is only the sons of good families—boys bringing with them a heritage of accumulated educational traditions—which sit on the benches of English public schools, this is a galling admission to make to German *Gymnasien*, in which the baker's son rubs shoulders with the future Chancellor of the Empire.

Having counted the cost of his son's education the German has not to reckon with the spirit of caste as likely to hinder his boy's career. A youth who passes through a *Gymnasium* in Berlin has no more privileges than he who has studied through the same curriculum in some desolate provincial town. The Teuton has risen above the social distinctions and petty rivalries separating the Mudbury Grammar School and the Blockheads' Academy. Change of residence from east to west, or north to south, makes no perceptible difference to the continuity of a boy's education, as the schools of the same type have a nearly identical curriculum in the different German States.

One of the greatest drawbacks, however, to Germany's system is the necessity for the parents to choose a type of school for their sons when the latter are only ten years of age. This choice practically fixes his future profession, or at least narrows the later selection. Having once chosen a classical school it is difficult to change to a modern type. This brings us to the "Frankfort Reform Plan," which, although based upon pedagogic principles, has the utilitarian advantage of allowing parents to make their final choice three years later. This reform proposes to make the three first classes in all types of nine-class schools uniform. Only one language would be commenced, viz., French. After three years the lad could change to another type of school without any rupture in his work. Without entering into a discussion of this plan it is only necessary to state that during the last ten years well above one hundred *Reformschulen* have sprung into existence, and have justified their supporters' theories. Furthermore, the lads in these schools are not "picked sets of boys" like those one finds in scholarship classes in England, as Mr. Headlam avers, but general everyday material.[2]

At this point it is possible to state and answer an everyday question on the lips of English educationists. Is there as great a leakage of boys from German middle schools as from the corresponding English institutions? No, there is not, and for this the writer submits the following reasons.

First, because the present generation of Germans are far more highly educated than Englishmen, and therefore understand better and appreciate more highly the ideal advantages of higher education.[1]

Secondly, the State has organised a splendid system of schools staffed by a highly trained army of teachers, thus placing within the reach of the great bulk of the nation a sound scientific education in any branch of human knowledge. At the same time a parent can count the cost in advance, and has the absolute assurance that the chosen path will not turn out to be a blind alley. This State organisation has raised education out of the slough of commercialism.

Thirdly, the public has—and with good reason—unwavering confidence in the existing institutions, knowing them to be founded and worked upon the principle "thorough." The "junior master," aged seventeen to twenty-two, devoted to sports, gentlemanly in appearance, &c., is non-existent.

Fourthly, the destinies of scholars and teachers are in the hands of far-seeing, though not infallible, Ministries of Education, and parents can place their sons in excellent schools without paying tribute to scholastic agencies.

Fifthly, scholastic agents and "exclusive schools" are unknown in the Fatherland.

Sixthly, the desire to serve one year in the Army instead of three exercises a healthy compulsion to pass through at least a six years' course.

Seventhly, the linking up of the schools to the universities and to occupations in public life; added to which the low cost of a university education (in its turn linked up to public life) spurs men of all classes to endeavour to obtain it.

In the interesting "Special Report" to which reference has been made several times, Mr. Frank Fletcher (Marlborough) ventures the opinion (p. 117) that "we suffer as much from want of system as they do from being over-systematised." Unfortunately, Mr. Fletcher did not proffer any information as to how German schools, pupils, or teachers suffer from their splendid national organisation, and the present writer, after an eight years' search for the alleged disadvantages, must also confess his inability to state them. He has rather been forced to the conviction that it is just this organisation which has slain the "quack" and "crank," raised the standard of efficiency, and extended this standard through far more social strata than is the case in England. Not only this: it has called into being a class of teachers as worthy and dignified as any other profession—men who are

[1] *Op. cit.*, p. 54.
[2] *Op. cit.*, pp. 53-4; and Prof. Bock, "Das Reformrealgymnasium," *Bayrische Zeitschrift für Realschulwesen*, 1908, pp. 177-92.

[1] *Vide* J. L. Paton, "Method of Teaching in the Reform Schools," Special Reports on Educational Subjects, vol. xx., p. 122: "This is one of the features in the German system which most strikes an English observer. It argues on the part of the German public in general a worthier conception of secondary education, a willingness to wait for its late harvest, and to make the sacrifices which waiting involves. They know what secondary education is, they value its advantage, they think ahead and count the cost, then, having once started their sons in a secondary school, they carry the project through. Thus the secondary school has in Germany the advantage which the elementary school has in England: it can count on keeping the boy for a continuous period of at least six years and it can plan out its work as a whole on that basis."

specialists. It is just on these two points where the English system (?) can make no comparison with Germany—teachers and organisation. Instead of our schools being vitally and organically related to each other, pursuing a definite aim or aims, they are often so many "warring atoms," at war as well from the educational as the commercial point of view. Such a chaotic confusion of good and bad, of efficiency and quackery, is not well adapted to educate the nation in the ideal value of education, nor to inspire its confidence in spending large sums on the education of its children.

Educational reforms and plans must come from the schoolmen; they never spring of themselves from out of the people; and this is perhaps the most deplorable admission of all, that modern England has no great educationist or statesman capable of formulating a national system of schools which shall develop the intellectual material of the nation to its highest powers, and direct those powers into the best channels. For several decades school inspectors, &c., have visited Continental countries to study their educational systems, and have returned home with innumerable fads—but no system. Everything of the fantastic has been copied, but no foundations have been laid; with the result that England's educational system to-day resembles a piece of patchwork containing a rich variety of colours and a still greater variety of stuff-quality. It were better for us to have done with educationists who preach about "the rigid uniformity of system which is alien both to the English temperament and to the lines on which English public schools have developed." The said public schools have hopelessly failed to meet the necessity of a national system of education, or to form the nucleus from which such a system could or can develop itself. That the Falls of Niagara, however, dissipate untold natural forces is just as true as that England wastes immeasurable intellectual force because her forces are allowed to dissipate through not being disciplined and bridled by a fitting educational mechanism. Therefore let England turn to the prosaic work of organising!

THE THIRD INTERNATIONAL CONGRESS OF SCHOOL HYGIENE.

THE International Congress of School Hygiene held in Paris from August 2nd to August 7th proved a worthy successor to the former congresses of Nuremberg and London. Although attended by about 2,000 delegates from all parts of the civilised world, the Congress, as is always the case, took its direction and colouring from the country and city in which it was held. It is interesting, therefore, to note that France stands at this moment in relation to school hygiene almost exactly where England did at the time of the Second International Congress in London of three years ago. Then, both in interest taken in the subject and in the general development in the practice of school hygiene, we took a place relatively inferior to the rest of the world. Now, as became abundantly clear during the progress of the present Congress, England has jumped into the first rank, and, so far as elementary education is concerned, enjoys a comprehensive scheme of hygienic oversight of schools and scholars unsurpassed by any other nation as a whole. In the same way, although France has hitherto failed to keep pace with the rest of the world, it is clear that as a result of the focussing of attention by the present Congress, much activity will result in the near future, and, just as medical inspection followed in England close upon the heels of the Congress of 1907, so in France before the end of the present year complete hygienic oversight and medical inspection of schools throughout the land will certainly become law by the passing of a Ministerial proposal which is already before the Legislature.

The opening meeting of the Congress was held on Tuesday, August 2nd, in the magnificent grand amphitheatre of the Sorbonne. It was presided over by Dr. Landouzy, the *doyen* of the Faculty of Medicine of Paris, delegated by the Minister of Public Instruction. The inaugural address was delivered by Dr. Albert Mathieu, the president of the Congress, whose remarks may be summed up in the formula: "Fresh air in the schools, fresh air in the lungs, fresh air in the time-tables."

On the three succeeding days the general sittings of the Congress were held in the Grand Palais of the Champs Elysées. On the first day "Uniformity of Method in Medical Inspection" was discussed. The French contributors advocated on theoretical grounds a very full and detailed individual inspection. It was interesting to note how the practical British genius throughout the discussions, both in the general and sectional sessions, was brought into play to modify and restrain within bounds the more theoretical and unworkable ideas of the Continental enthusiasts. It was Dr. James Kerr who summed up English opinion on this subject. He condemned daily visitation of schools by doctors with a vague preventative aim as a waste of time. For practical results in obtaining treatment he considered that all children should be periodically examined without elaborate histories and records. For statistical purposes smaller and more manageable groups of children should be taken, and the results worked out in great detail on approved biometric principles.

The second general sitting dealt with "Instruction in Sexual Hygiene." Very great importance is attached to this by almost all the Continental authorities, and the discussion was prolonged over several sessions, both mornings and afternoons. English opinion has not yet formed itself upon the question, and no English members took part in the discussion. Some of the charts exhibited, notably by the Swedish section, and reading-books by the German, appeared not only unnecessary but absolutely repellent to the English members. Although a case was made out for the necessity of some degree of instruction, opinion

was very sharply divided alike upon the methods by which it should be imparted and the person who should give the teaching—whether teacher, doctor, or parent. Even the modified resolution which was finally passed at the terminal general meeting met with considerable opposition.

The general question of the third day was "The Training and Appointment of the School Doctor." English opinion was here voiced by Dr. Hogarth, who pointed out that for medical inspection merely the general training necessary for general practice is required, but for administrative posts the holders of which would necessarily become the advisers on health matters to education authorities and school governors a very extended and complete special training is necessary.

Daily meetings took place in all the thirteen sections and sub-sections. It is impossible to touch upon the whole of the subjects discussed, but the labours and opinions of the Congress may be summed up in the resolutions sent up from the various sections and endorsed by the terminal general meeting.

These were in chief:

(1) That instruction in school hygiene should form an integral part of the course in training colleges for teachers, that it should be a failing subject at the certificate examination, and that the instruction should be given by qualified medical men.

(2) That the Society of School Doctors of Paris should appoint a commission to study and codify the instructions which should be given to school doctors and head teachers, and that this commission be directed to draw up rules that are simple, precise, and easy to follow.

(3) That uniform health records of scholars be established in all schools—simpler in the case of day scholars, more detailed in the case of residential pupils.

(4) That physical education be compulsory in all schools (both for boys and girls).

(5) That sufficient playgrounds for children should be established and maintained by all municipalities.

(6) That for all younger children instruction in natural history should be given as a preparation for more complete instruction in sexual knowledge and hygiene, which should be given to all scholars in the adolescent period.

(7) That candidates for the teaching profession be instructed by school doctors and masters of method on the details of the sexual question.

(8) That the necessary information to parents should be given by school doctors and teachers in specially arranged conferences.

It is satisfactory to note that English practice has already achieved most of what is regarded as necessary in the opinion of the Congress as expressed in these resolutions.

There were among the subjects discussed in the sections some of more especial interest to teachers. In Section IX., on "Teaching Methods and Syllabuses in Relation to School Hygiene," a remarkable discussion took place on the question of "Inattention." Schuyten, of Antwerp, showed how inattention could be measured physically, and exhibited curves of attention distributed over a whole year. He demonstrated that inattention at times is inevitable and natural, how it is increased by defective conditions in the sanitation of the school, and can be diminished by the satisfaction of the motor needs of the organism. He lent his support to the view that uncoordinated subjects should not follow one another on the same day. On this latter question the general opinion emerged that the starting effort was generally the most fatiguing, and our time-tables formed to jump from one subject to another were condemned. The subjects of a particular day should be so grouped as to bear a near relationship one with another. In this section, too, the prevalent inelasticity of time-tables was generally condemned. Many speakers, from widely different points of view, urged the importance of handwork in schools. Schrag, of Berne, advocated the grouping of subjects round a common centre, and advanced the claims of manual training as a unifying principle.

An interesting paper by Mumford, of Manchester, dealt with the causes of divergence between scholastic attainment and calendar age, founded upon an investigation into the careers of 870 boys at the Manchester Grammar School. He concluded that the slowly developing boy often becomes the abler man, and that the backward lad may have been developing his resources of physical energy, which later stand him in good stead when pitted against his more brilliant competitors; he showed the high importance of acuity of sight and hearing, and finally dwelt upon the importance of manual training in developing the association centres of the brain, where impulses from the various sense organs are organised in relation to the combination and arrangement of the muscles.

Janelle, of Prague, in a communication on "Fatigue," based upon extensive experimental researches, seemed to conclude that a single session a day was better in general results than two shorter sessions, for the reason that it gave a longer period in daylight devoted to free development in the open air.

In Section VII., "The Teaching Staff, its Hygiene and Relations with the Homes and with School Doctors," Altschul, of Prague, contributed a thoughtful paper, in which he insisted upon the necessity of knowledge and interest in school hygiene on the part of the teacher. He pointed out that statistical records lose their value unless the material is first submitted to teachers and viewed in the light of their comments. He showed how school hygiene is inevitably broadening out into a hygiene of growth and development, and thereby becomes an important link between school and home; and, finally, that the teacher is the most important factor in popularising the lessons to be learnt from the advances in medical science.

In Section IV., on "Physical Training," were contributed many papers of importance. Demeny, in a paper on "School Gymnastics in Relation to Age and Physical Development," laid down the principle that we must think less of the muscles themselves and more of the organs which command them. His cry was "Back to the Greeks," with their ideals of dexterity, suppleness, and elegance. Digby Bell, in a paper on "Physical

Training in the British Navy," dwelt on the importance of rescuing the subject from the taint of quackery.

Axel Dam read a paper on Danish Sloyd, which, together with the models in the exhibition, confirmed the opinion that northern methods of manual training have become stereotyped into a ritual, and have thereby lost the elements of progress.

Mention here should be made of the very excellent demonstrations of physical exercises given in the central hall of the Grand Palais in the afternoons. In no other sphere has greater progress been made during the last few years. English methods were worthily upheld by two teams of ladies from the Chelsea Training College for Physical Educators and the London County Council Normal College of Greystoke Place respectively. The Swedish drill and especially the Morris and English folk-dancing of the former made a very deep impression.

Another demonstration of great interest was a practical application of Demeny's theories, in which a pupil exhibited his method of continuous movements, which to the eye produced an effect which was extremely pleasing, and was preferred by some to the Swedish movements, as much upon physiological as upon æsthetic grounds.

The Parisian educational establishments visited by the members proved upon the whole disappointing; they compared unfavourably in planning and in hygienic arrangements with corresponding institutions in England. Sanitation seemed to be less carefully considered, and many institutions appeared never to be thoroughly cleansed. An elementary school, privately visited, stood in the Avenue Bosquet. It consisted of an insanitary two-storied building of wood thirty years old, which would not be tolerated by the English Board of Education; but very striking to English visitors was the well-equipped kitchen for the "Cantine Scolaire" and the hygienic texts upon the walls in lieu of pictures, which gave wholesome advice upon the prevention of tuberculosis, or homely proverbs, such as "Lêve-toi tôt, couche-toi tôt."

Amongst the secondary schools, however, was one that stood out as a model of hygienic construction. This was the Lycée de Montaigne, situated in the Rue Auguste Comte. Although an old school, the original designers stumbled upon a construction of the quadrangle type which could not easily be bettered. Every class-room was so arranged as to have two sides in contact with the open air, and in this respect it is a prototype of the new "Staffordshire type" of elementary school in England.

A feature of the Congress was the Exhibition which occupied the ground floor of the Palais, arranged in sections under the auspices of the various Governments.

The English Government, unfortunately, stands alone in refusing officially to take part in the organisation of the Congress, and British education was represented merely by a few plans and photographs from the London County Council and some charts of the school dental work at Cambridge. Most of the foreign Governments were well represented; even Mexico had a complete little exhibition of its hygienic organisation in schools. Prominent in the exhibition was the display of the town of Berndorf, in Lower Austria, the very complete arrangements of which for the hygienic environment of its children demonstrate at once how much is already possible, as well as how far we have to travel. Some beautiful models of parks laid out for educational and recreational purposes formed the feature of an exhibit by Austrian Galicia. The splendid wall-diagrams showing correct and incorrect postures in physical exercises stood out in the Danish section (to be obtained from H. Hagerups Forlag in Copenhagen). Other interesting exhibits were the results of researches at Binet's Laboratory of Pedagogy in Paris, and the woodwork of the northern countries, notably Finland, Denmark, and Sweden.

At the final meeting at the Sorbonne on August 7th an important speech was made by the Secretary of State for the French Navy, who pledged the Government of France to carry into effective operation the proposals upon school hygiene already before the Chamber, and enlarged upon the importance in schools of instruction in hygiene, especially in its relation to alcoholism. Sir Lauder Brunton returned thanks on behalf of the foreign visitors to the Congress.

It was finally announced that the next Congress would assemble in the town of Buffalo in 1913.

THE STUDENTS' CAREERS ASSOCIATION.

By M. G. FRODSHAM, B.A.
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IN an age of much association and many associations there has appeared—or, more correctly, there is in process of appearance—yet another. The formation of the Students' Careers Association is the culmination of a good deal of quiet and unobtrusive work that has been steadily going on during the past ten or twelve years, and increasingly of late. There is very little about it that is entirely new, but this crystallisation of work already done will, it is hoped, form the basis of many fresh developments, and will possibly lead to far-reaching results.

The idea has emanated from the committee of the Central Bureau for the Employment of Women, the work of whose able secretary, Miss M. G. Spencer, is well known in the educational world. As a result of long and careful consideration on the part of this committee, it was decided to form a separate department of the bureau, to undertake the task of bringing the work of the Central Bureau and all similar and allied bureaux for the employment of women and girls into more direct and immediate connection with the work of teachers in girls' schools and colleges.

A preliminary leaflet was drawn up and circulated among certain heads of schools and other

educational workers, giving as the objects of the association the following:

(1) To establish a definite connection between colleges and schools on one hand, and associated employment bureaux on the other.

(2) That a representative committee, consisting of teachers, representatives of the Head- and Assistant-mistresses' Associations, and members of employment bureaux should meet twice yearly for discussion and interchange of ideas, in order to be able to supply:

(*a*) Employment bureaux with up-to-date information on educational matters, and notifications of any changes that may have taken place in the teaching world;

(*b*) Colleges and schools with expert knowledge on all employment questions, and trustworthy and up-to-date information on all professions open to educated women, together with the necessary facts in regard to supply and demand, standard of salaries, training, age limit, &c.

(3) By constant communication between the educational world and employment bureaux to prevent the drifting of women and girls into unsuitable or overstocked professions.

(4) To consider any *new openings* that may have been investigated by employment bureaux, and to discuss their possibilities.

From among those who welcomed the idea of the formation of this association, and were willing to devote a certain amount of time and thought to its further development, a committee was formed, including initially the following teachers:

Miss B. A. Clough, Vice-Principal of Newnham College, Miss K. Jex-Blake, Vice-Mistress of Girton College (Vice-Presidents); Mrs. Bryant, Headmistress of the North London Collegiate School; Miss S. A. Burstall, Headmistress of the Manchester High School; Miss M. G. Frodsham, Headmistress of St. Saviour's and St. Olave's Grammar School; Miss E. S. Lees, Chairman of the Assistant-mistresses' Association; Miss H. Powell, Principal of St. Mary's Training College; Miss A. T. Steele, Headmistress of the Notting Hill High School; Miss Tuke, Principal of Bedford College; Mrs. Woodhouse, Headmistress of the Clapham High School.

There is at present no president of the newly formed committee.

The next step was a letter sent to the *Times* towards the end of July, giving the above particulars, and signed by the president of the Central Bureau and by the two vice-presidents of the Students' Careers Association.

The committee has not yet had an opportunity of meeting, but will probably meet for the first time in October, and at half-yearly intervals afterwards. It is early yet to anticipate what will be the course of definite action. There is so much that can be done, and so much urgently needed to be done, that it will probably be more difficult for the committee to decide what to leave undone than to settle what to do, in the first instance.

It is proposed, among other things, that lectures be given in schools and colleges which desire to have them, such lectures being particularly addressed to the students who will shortly have to take up work in the great world beyond school or college, and to their parents if arrangements can be made for their attendance. These lectures could be on the very wide subject of openings for girls generally, or they could give more detailed information on some one or more of the *new* openings which are constantly arising for women's work, or on some particular career or careers for which a certain number of the girls in any one school or college may be specially suitable, or in which for one reason or another they may be specially interested.

It is possible, also, that visits to schools and colleges can be made by those who have expert knowledge of any career not generally well known, for the purpose of discussing particulars with individual girls who wish for detailed information and practical help in starting or in preparing themselves for it.

In the past it has been open to any girl to apply to any employment bureau for help or advice, either in the choice of a career or in her preparation to enter upon any course already chosen; but the experience of workers in employment bureaux is that in very many cases both the girls themselves and their parents have very little idea of the kind of work for which they are most suited or for which they could best fit themselves, and equally little knowledge of the means at their disposal by which they can prepare themselves for the work desired. In many instances the knowledge possessed by applicants of careers open to women is so limited that they rather naturally incline towards those kinds of work for which little or no special training is required, but which give immediate though small returns by way of pecuniary remuneration; hence the overstocking of the market for "lady-clerks," shorthand-typists, &c. Such choice is made irrespective of the particular bent of mind or gifts or taste of the girl, and too often results in failure and disappointment, or even greater evils than these.

It is hoped that the efforts made by those interested in the Students' Careers Association will tend to minimise these difficulties. The main point to be emphasised in the aims of the promoters of this new association is that it should help to bring about co-operation between the teachers and the employment bureau. For it is the teachers who know the girl and her character and attainments and personal qualifications, in addition to her scholastic or academic career; and it is the employment bureau which brings to bear on each case expert knowledge of the ways and means to secure the kind of work that is wanted by the girl and her parents, and for which the teacher thinks the girl is, or might become, well fitted.

Forms of inquiry for students are already in print, and will be sent to any head- or assistant-mistress desiring to join the association. On these forms will be entered the necessary information concerning the students who are applying for work, particulars of their education and qualifications, age, certificates held, the special kind of work desired, and the reasons for the choice. This information will be signed by the teacher or lecturer of each student, who will add any remarks she thinks fit. The completed forms will then be sent, together with the consultation fee of 6*d*. per applicant, to the secretary of the

Central Bureau for the Employment of Women, 5, Princes Street, Oxford Circus, who will thereupon enter into communication with the student or her teacher or lecturer.

For almost all kinds of really good work it may be assumed that a student will need some kind of special training after leaving school or college, however good her general education has been. Therefore when, with the help and advice of teachers and employment bureau, the important question of the choice of a career has been settled, the next point is to decide how and where this special training can best be obtained, regard being given to the individual girl and her personal and home circumstances.

It is a fact that a well-educated girl can often obtain work of various kinds without any special preparation or training for it, but even where this is the case it is probable that the same girl could do the same work far more efficiently and with far greater satisfaction to herself and those with whom, or for whom, she works, if she could have the advantage of even a short course of special training for it. Also in all probability she would be more likely to rise ultimately to the higher positions in her branch of work if she could make the good start that some such special preparation would ensure her.

Where the home circumstances of a large number of the girls attending any school or college are such that it is essential for the girls to begin to earn money immediately after leaving school—as is the case with many of the girls attending middle schools and many municipal secondary schools—it is questionable whether something more might not be done, and ought not to be attempted during their ordinary educational course, towards preparing them for making a right choice of a future career, whether home life or other occupation, and also towards preparing them for it when chosen. This seems to be increasingly felt in these days, and various independent attempts are being made in different educational institutions to realise this end.

But however this may be, it ought to be of immense value to the large majority of girls who have received merely a general education, however good, however thorough, and however broad and "liberal" in the fullest sense, to be able to avail themselves of this co-operation between teachers and employment bureaux, each giving expert advice and help from their separate points of view, and each bringing expert knowledge to bear on her particular case.

It is significant that the London County Council has already taken a step in this direction, by the appointment of a lady to inquire into various commercial and technical and other openings for girls in London in order to be able to help, directly or indirectly, the heads of those secondary schools which have among their pupils L.C.C. scholars, to find work for these girls when they have completed their school careers.

The help in question will be welcomed most heartily by all heads of the schools concerned, who feel that the burden of this additional responsibility is indeed a heavy one. It is, however, a case of merely the "thin end of the wedge"—so good a wedge, however, that one could wish the thicker end were in sight. If the problem were not so serious and so urgent, one could almost smile at the picture of the amount of work which lies before that one woman, even with all the hearty co-operation she is doubtless receiving and will receive from the heads of most of the schools concerned. Many women might be fully occupied with such important and far-reaching work, teaching as it does such an infinite variety of occupations. Indeed, it would seem that each large school could well give enough employment of this kind to more than one woman specially attached to it.

The opening of the recently established Labour Exchanges has been another step in somewhat the same direction, but their object seems to be to endeavour to place candidates who want work in existing posts which happen to be vacant, rather than to choose that sort of work for which a candidate is, or might become, best fitted—and still less to help her to become qualified and fitted for it.

Some idea of the various ways in which the employment bureaux claim to be able to give practical help to candidates applying may be gathered from the following suggestions printed at the back of the inquiry form for students.

(1) They can offer suggestions as to her future work, whether in home life or any other occupation.

(2) They can tell her of the best schools or institutions at which to train, and they can warn her of fraudulent trainings. If money is a difficulty, they can usually obtain for her a loan which will cover the whole cost of training, and be repayable by her in small instalments when she is in a post.

(3) They can introduce her to an inexpensive hostel, where she will be comfortably housed and fed, in any district she chooses.

(4) On the expiration of her training they can offer her posts, and advise as to choice, salary, &c.

(5) They can help her to good holidays if she is unable to obtain them for herself, or to go home.

(6) By means of the thrift department, she can be advised as to good and safe methods of investing capital, savings, &c., and be supplied with information as to the procuring of Old Age Pensions, sickness insurance, &c. If at any time desiring to take over a school or business, she can be given full information as to the best way of ascertaining its financial value.

(7) If engaged to be married, they can offer her suitable preparation for work at home by a training in housewifery and home management.

(8) If desiring to emigrate, they can introduce her to agencies which will give her all the necessary information as to the demand for workers, climate, equipment, cost of passage, &c. They can introduce her to a special training for colonial life.

The above will serve to show what a wide range is covered by the work of employment bureaux, and how varied are the means at their disposal of offering help to students applying to them.

Enough has been said to make it fairly obvious that the result of this co-operation between

teachers and employment bureaux in the Students' Careers Association will be most beneficial to the students who are seeking work of any kind on leaving school or college. It is also clear that the work of the employment bureaux will be greatly assisted and rendered more effective by the help they will obtain from the teachers and lecturers who join this association. But there yet remains a word to be said on behalf of the teachers concerned. It may be urged that it will add to their already arduous labours, and that it is outside the province and work of the teacher to influence or desire to influence a girl's future walk in life. But most people will agree that the content of what is called "education" becomes larger and more varied year by year, and that the work of the best teachers does not end but merely begins with teaching, in short, that the word "teacher" means "educationist" used in the widest sense. In most instances a teacher, particularly a head teacher, by joining this association will be merely directing some of the efforts she is making, and has been making for some time past, into channels whence more satisfactory results can be obtained, and she will be thus rendering her own work more effective, with perhaps less rather than the same amount of effort on her part.

Rightly or wrongly, heads of schools and principals of colleges are accepting wider and fuller responsibilities on behalf of those committed to their charge. It is confidently hoped that they will welcome this new association as a further means of assisting them in the discharge of some of their multifarious duties and responsibilities, and that they will, by their hearty support, endeavour to make some at least of the aims of its promoters possible of fulfilment.

AN EXPERIMENT IN HISTORY TEACHING.

By THOMAS H. BOWTELL, M.A.
Accrington Secondary School.

HISTORY, like other school subjects, has its own inherent difficulties for the teacher to face and overcome. Among such difficulties is the fact that, to a large extent, boys and girls are expected to listen while the teacher talks. Thus the pupils are passive while the teacher is active. The problem before us is how to reverse this method, and make history, under the teacher's guidance, far more disciplinary than it is at present.

With the junior forms, biography and those portions of history which lend themselves to pictorial and narrative representation will always be important, and will necessitate on the part of the teacher practice in the art of telling a story well. Here, too, the personal element is extremely important. Even in the middle forms, the teacher will be called upon to do much of the work in using the biographical or narrative method, but in the senior forms the bulk of the work ought to fall on the scholars themselves, and the teacher should be a guide and little else. Hence my suggestion with respect to the teaching of history will deal mainly with senior forms, although not wholly so.

There are two methods whereby history can be made far more disciplinary than at present: first, by cultivating the power of independent reading; and, secondly, by cultivating the power, in some small measure, of drawing inferences from historical facts. Both methods can be used with great benefit in senior forms. The first method necessitates a small class and a good reference library; the latter method can be used with a large class, the members of which possess good text-books and a good synopsis of history similar to Miss Rolleston's "English History Notebook."

The method of training boys and girls in drawing inferences from historical facts tends to make generalisations vivid and real to them. As a rule generalisations in history are particularly liable to breed misconceptions and inaccuracies. The teacher is apt to forget that a generalisation, which to him is full of reality, may be and is to the scholar unreal and uninteresting. The reason is obvious; the teacher has many facts in his mind which make the generalisation vivid and vital; the scholar does not possess these facts. On the other hand, "facts" by themselves are considered "dry," and rightly so, for everything which is learnt outside, and unaccompanied by its environment, is uninteresting. Facts are merely the skeleton which needs to be clothed with the living flesh and blood of well-thought-out and therefore interesting generalisations. Therefore our problem is twofold: first, to make "generalisations" and "facts" interdependent, and secondly, to get the boys and girls to solve this mutual dependence for themselves. In this way history will prove a far better mental discipline than it is at present.

The method, then, is to cultivate in the scholars some ability to draw their own historical inferences from a set of facts carefully selected by the teacher. Objection may be taken to the latter part of the previous sentence with respect to "selected facts." But in school, where we deal with immature minds, do we not regularly use selections both as regards the humanities and experiments in science? What is more uninteresting than committing to memory the terms of treaties, bare facts with scarcely any reference to their part in the historical environment; yet such treaties can be made interesting by adopting the method of classification and inference. The Treaty of Paris, 1763, provides a good example. Let us assume that each member of the class possesses a good synopsis, which gives the terms of the treaty in fair detail. Then by careful questioning obtain the following re-classification. We note that (*a*) the previous war was fought between England and France; (*b*) certain places were ceded by England to France, and *vice versa*; (*c*) most of these places were colonies and trading stations; (*d*) the items of commercial interest are

important—*e.g.*, fishing rights. Then assuming that what appears in a treaty is in reality what the two nations were fighting for, the class will draw from (*a*), (*b*), (*c*), (*d*) the inference that the war was fought between England and France for commercial and colonial supremacy. Then, in proof of the accuracy of the generalisation, the members of the class can be trained to illustrate the generalisation by reference to their text-books, atlases, and larger works of reference.

Similarly, if time permits, other treaties of the eighteenth century can be taken, which would finally bring out the broad generalisation wrapped up in Prof. Seeley's phrase, "The Second Hundred Years' War." A somewhat different illustration of this method can be taken in connection with the Industrial Revolution.

Let the following classified list of facts be given to the form.

FIRST TWELVE COUNTIES.

	In 1700	In 1750	In 1881
1.	Middlesex	Middlesex	Middlesex
2.	Surrey	Surrey	Surrey
3.	Gloucester	Warwickshire	Lancashire
4.	Northampton	Gloucestershire	Durham
5.	Somerset	Lancashire	Staffordshire
6.	Worcester	Worcestershire	Warwickshire
7.	Herts	Herts	West Riding (York)
8.	Wilts	Staffordshire	Kent
9.	Bucks	Durham	Cheshire
10.	Rutland	Somerset	Worcestershire
11.	Warwickshire	West Riding (York)	Nottinghamshire
12.	Oxfordshire	Berks	Gloucestershire

	Population in		
	1685	1760	1881
Liverpool	4,000	35,000	500,000
Manchester ...	6,000	40,000	400,000
Birmingham ...	4,000	30,000	400,000
Leeds	7,000	—	300,000
Sheffield	4,000	25,000	280,000
Bristol	29,000	100,000	200,000
Nottingham ...	8,000	17,000	110,000

By a series of questions the form will sum up or re-classify the facts somewhat as follows: We note that (*a*) Lancashire, Durham, the West Riding of Yorkshire, and Staffordshire do not appear in the first list, but take a high position in the third list; (*b*) Liverpool, Birmingham, Leeds, and Sheffield, cities of the counties enumerated above, greatly increase their population; (*c*) Oxfordshire, Rutland, Bucks, Wilts, and Hertfordshire fall behind in the race. From this re-classification the class will naturally infer that "something" must have happened between 1700 and 1881, and most likely between 1760 and 1881 (see the Population Table) to bring about this great change with respect to certain counties and towns. The name given to this great change, "The Industrial Revolution," can be told the class. Here, again, the boys and girls will gather further illustration to prove that this change is well termed "The Industrial Revolution."

This inductive method can be used with any great event in history, and perhaps it may be as well to illustrate its use from two other periods and from other and different topics. Draw up for use in class the following list of dates and facts which deals with an important topic of the Elizabethan period.

1559. The Act of Supremacy.
The Act of Uniformity.
Return of Protestant (Calvinist) exiles.
1561. Overtures of Pius IV. refused by Elizabeth.
1562. Act to suppress Romanists.
1563. The Thirty-nine Articles drawn up.
The close of the Council of Trent.
1567. Calvinistic Conventicles are suppressed.
1568. The R.C. College at Douay.
1570. The Pope Pius V. excommunicates Elizabeth.
Expulsion of Cartwright, a Calvinist, from Cambridge.
1571. Act of Parliament making it treason to impugn the Queen's title.
Act of Parliament forbidding the publication of Papal Bulls.
1572. Massacre of St. Bartholomew.
1577. Grindal, Archbishop of Canterbury, suspended from his office for not suppressing Calvinistic teaching.
1579. Foundation of a Jesuit College at Rome for the reconversion of England.
Expedition of Sir J. Fitzmaurice to Ireland, blessed by the Pope, fails.
1580. The Jesuit attack on England led by Campian and Parsons.
1581. The Recusancy Law inflicting heavy fines for hearing or saying Mass.
Execution of Edmund Campian.
1583. Prosecution of Calvinists by Archbishop Whitgift.
Establishment of the High Commission Court on a new footing (v. 1559).
1584. Jesuit teaching bears fruit in (*a*) Throgmorton's Plot, and (*b*) Babington's Plot, 1586.
An Act passed against Jesuit and Seminary Priests.
1587. Proclamation by the Pope of a crusade against Elizabeth.
1588. The sailing of the Armada.
1591. Law passed against "Popish Recusants."
1593. Anti-Separatist Legislation (Separatists a sect of Calvinists).
Execution of the Separatists, Barrow, Greenwood, and Penry.

It is probable that one or two terms—*e.g.*, Calvinist—may need a brief explanation by the teacher, but this in no way invalidates the method. The class will note that (*a*) during the Elizabethan period Roman Catholics were persecuted; (*b*) also Calvinists or extreme Protestants were persecuted; and from (*a*) and (*b*) they will draw the inference that the Elizabethan settlement of the English Church was neither Catholic nor Calvinistic. Further reference to books and guidance by the teacher will illustrate the Elizabethan Via Media in religion. The second instance are two small sections of Domesday Book which may be taken as types of that important survey.

(1) "The Land of William of Braiose. In Redings Hundred. W^m of Braiose holdeth of the King Sudcote, Brictward held it of King Edward. The land defended itself for two hides, now for one hide. The land is of 3 ploughs. There is one in the domain and 5 villeins and bordars with 2 ploughs. There is a mill of 18 shillings worth and

a fishery of 50 pence worth. It was worth £4, now 100 shillings."

(2) "In the time of King Edward, Oxford used to pay for toll . . . yearly to the King £20 and 6 sestiers of honey. To Earl Elfgar £10 besides a mill which he had inside the city. . . . Now Oxford pays £60 by tale. . . . All the mansions which are called mural in the time of King Edward were free from all custom save going to war and wall repairs."

The class will note that (*a*) a Norman owner of land replaces a Saxon in (1); (*b*) two comparisons are made—*e.g.*, "in the time of King Edward" and "in the time of William"; (*c*) no mention is made of Harold; and so on. Then, as in previous cases, the scholars may illustrate similar tendencies to (*a*) from their text-books, &c.

It is not intended that this method should be continuously used, as that would take up too much time, but if taken along with independent reading and supplemented by the teacher, it proves an invaluable help in making history interesting and disciplinary. This method brings home to boys and girls the importance of fact, and it enables them to realise far more vividly than heretofore that the generalisations of their text-books are founded on facts similar to those from which they have been accustomed to draw inferences. A good exercise to set a class in this method is the illustration of some generalisation in their text-book which the author does not stop to prove. In this way they get a little training, however feeble, in historical deduction and induction, and begin to realise that history is a science. One point among many that from my own experience has improved is the use of adjectives in historical biography when written by a class. Boys and girls begin to cultivate a sense of proportion, not only in their use of adjectives, but also in their estimate of the importance of persons and events. The ability to trace cause and effect is also greatly improved by this method. Methods, however, like subjects, have their own inherent dangers, and the chief danger against which to warn scholars in this method is that it is an easy thing to draw accurate generalisations. They must be taught to see that in history, as in every other science, a vast amount of research work has been done to get the facts available for use, and also that good classification needs great care; but once these are given to us, the inferences are comparatively easy.

The method of inference in the teaching of history also reacts favourably on oral and essay work in class. From time to time it is well to give the class an historical generalisation to think over, and then expect them to illustrate it orally. This makes them able to reason when on their feet, and gives them some slight training in the art of public speaking. Again, with respect to the effect on essay and other written work, this method proves valuable. The paragraph may be taken as the unit of an essay; in other words, an essay is a series of connected paragraphs. Owing to practice in the method of inference, a class can easily be taught to make each paragraph begin with a broad generalisation similar to Macaulay's usage, and then illustrate it by less broad generalisations down to single facts and detail. In doing this, assuming the choice of words and expression to be good, the boy or girl will have written a paragraph clear, interesting, and full of cogent reasoning.

PERSONAL PARAGRAPHS.

MR. HENRY WESTON EVE, who died recently at his house in Gordon Square, was a man as well known in educational circles as any in recent times. He was mild and kindly, generous and hospitable, a hard worker who did not spare himself in the cause of education, a man who, as a writer in the *Times* says, "made many friends and not an enemy." ONLOOKER was one of the hundreds of young men to whom he was ready to lend a helping hand in the later days when he was Dean of the College of Preceptors. He was a Rugby boy, a scholar of Trinity, Cambridge, and took his degree in 1860 as a wrangler, and with a second class in the classical tripos. He was elected to a fellowship which he soon voluntarily vacated, and, his bent being towards school life, he accepted an appointment by Dr. Benson as a master at Wellington College. Here he organised the modern side, and served for twenty years, until he succeeded Dr. Key as headmaster of University College School, Gower Street. "He spared neither purse nor person in promoting the interests of the school," and in particular drew on his own private means to raise the number and remuneration of his teaching staff. He edited for schools many French and German classics, and his Wellington French Grammar has had, and is likely still to have a great vogue. In addition to his work for the College of Preceptors, he served on the Council of the Girls' Public Day School Trust, the Teachers' Guild, and many other educational bodies. He was a humanist in the best sense of the word, and had a keen delight in the pleasures of society. His handwriting was hieroglyphics, or "confusion worse confounded." He will be missed, particularly at the Athenæum, which was his special haunt.

* * *

To succeed Dr. H. B. Gray, the Council of Bradfield College has appointed the Rev. Harold Costley-White to be headmaster. Mr. Costley-White was a classical scholar of Balliol College, and took a first in classical "Mods." and a second in Lit. Hum. in 1901, and was honourably mentioned for the Hertford scholarship. He has been an assistant-master at Rugby since 1903. In future the office of Warden will be separate from that of headmaster. To be Warden the Council has elected Mr. Edward Armstrong, fellow and bursar of Queen's College, Oxford. He was educated at Bradfield, and is a Fellow of the British Academy.

THE REV. D. F. HEYWOOD, who died recently at Christ's Hospital, Horsham, had been a boy at Christ's Hospital, a classical exhibitioner of Worcester College, Oxford, and graduated in 1881. He returned to Christ's Hospital as an assistant-master on the modern side, and had for many years been the head of that department. He did good work in co-ordinating the studies of the modern side, but he specially distinguished himself by the enthusiasm and careful work he brought to bear on the organisation of the athletic interests of the school. He also managed a kind of informal employment bureau, an institution to which many Christ's Hospital boys have owed their first step in life. He held several curacies in London and the City, and was chaplain of the Cutlers' Company.

* * *

MISS RUTH FREER, who was a scholar of Lady Margaret Hall and took the school of modern history in 1906, has been appointed tutor of Cherwell Hall, Oxford.

* * *

MISS DOVE, who is retiring from Wycombe Abbey School, has received a handsome gift from the seniors and pupils of the school, and a presentation from the Council.

* * *

Two stalwarts of the Assistant-masters' Association, Mr. T. E. Page, of Charterhouse School, and Mr. R. C. Seaton, of St. Paul's School, have recently retired from school labours. Of Mr. Page it may be said that by his Virgil and Horace, his "Acts of the Apostles," his letters to the *Times*, and his speeches at the A.M.A. meetings we know him. It is one of the prominent ironies of recent educational history that he never became a headmaster. Mr. Seaton we know by his pen and his work on the legal subcommittee of the A.M.A. It is to be hoped that many years of mild activity and usefulness await both of them.

* * *

CANON HERBERT KYNASTON, professor of Greek in the University of Durham, had been an all-round man. Educated at Eton, he was a scholar of St. John's, Cambridge, and won the Porson scholarship in 1855 (the first year of its being awarded), and the Camden medal and the Sir William Browne medal for a Latin ode. In 1856 and 1857 he rowed in the Cambridge eight. He graduated in 1857 as one of a bracket of four as senior classic, was elected to a fellowship of St. John's in 1858, and in the same year became an assistant-master at Eton. He was appointed Principal of Cheltenham College in 1874, and held that office for fourteen years. In 1889 he was chosen by Dr. Lightfoot for the residentiary canonry of Durham and the chair of Greek. His edition of Theocritus is well known.

* * *

MR. FRED CHARLES, chairman of the Assistant-masters' Association, has published in the current *A.M.A.* a valuable digest of the salaries of masters in secondary schools in the towns of Germany with populations of over 100,000 as compared with those paid in similar towns in England and Wales. A few points of this summary may be cited. The comparison of the initial salaries is very much in favour of Germany; but it is in the final salaries that the greatest contrast is observed. In one German town the maximum is less than £300; in England there are only two towns—London and Liverpool—in which the maximum is over £300. "There is," writes Mr. Charles, "a nearer approach to equality between the scales of London and Berlin than those of any other corresponding towns. The advantage is with Berlin: the salaries of all the Oberlehrer rise automatically to £360, plus rent allowance, which varies from £60 to £28, while in London comparatively few men can hope to reach £350." Besides, the State provides for the future of German schoolmasters: in the big towns teachers receive pensions of from 75 to 100 per cent. of salary, and in only four of these towns do the teachers contribute towards these pensions. The inevitable conclusion is one which is obvious, but must be insisted on in season and out of season. "Our English conditions are such as to keep out of the schools many of the men best qualified socially, intellectually, and morally to train the youth of the country."

ONLOOKER.

SENECA'S LETTERS.[1]

PROF. SUMMERS has long made a special study of silver Latin, but this book is, we believe, the first important contribution which he has printed on the subject. And it is needed. Such is the modern routine of schools and colleges, that students attain high honours, and finish their classical studies, without any knowledge, or very little, of one of the most influential writers of antiquity. Seneca, indeed, has had an influence above his merits, both in philosophy and in drama; but for all that he is worth study. His style may be formless and without point, but his matter is interesting, and a book of selections is just the thing for him. Readers will not find the human touch very often; Seneca's letters are not Cicero's; but every now and then Seneca forgets to be a philosopher, and makes a neat hit (say) at a young dandy, "looking as if he had come out of a bandbox"; or discusses life in a noisy street, athletic exercises—surely this ought to commend him to an English university!—or he tells how he went out for an airing, and describes a friend's house. Philosophy, education, travel, vegetarianism, reading, the simple life, such are his subjects here. Prof. Summers has picked out the best of Seneca, and it should not only please the general reader, but afford many a hint for a sermon to the harassed clergyman.

Seneca needs notes, not only to explain allusions, but because he was not one of those who see in clearness the supreme merit of style. He was conscious of his own style, like Pater and Stevenson, and consequently sometimes sacrificed the substance to the shadow. Here Prof.

[1] "Select Letters of Seneca." Edited with Introduction and Notes by W. C. Summers. cxiv+384 pp. (Macmillan.) 5s.

Summers is a trustworthy and welcome guide. He does not condescend to the puerile notes of which we have to complain so often; he makes no lists of ablatives of description; but he gives out of the stores of his own study all that is needed to explain or to illustrate both matter and form.

But the best part of the book (and it is a good book) is the introduction: a carefully worked out discussion of the "pointed" style, with special reference to Seneca's prose. By the pointed style, the editor means that which "without sacrificing clearness or conciseness, regularly avoids, in thought or phrase, or both, all that is obvious, direct, or natural, seeking to be ingenious rather than true, neat rather than beautiful, exercising the wit but not arousing the emotions or appealing to the judgment of the reader." As an English example, he names Pope; as a Greek, Timaeus, with a caution that it may be only his faults are preserved. He traces this style through the later age of Greek and through Latin, and then gives a detailed analysis of Seneca's style. Lists of his colloquialisms are given, with indications where they have been used before in literature; lists of silver Latin words not traceable before; and new meanings. The syntax is taken under cases, parts of speech or grammar, and ornaments. The last section deals with the critics and the debtors of Seneca's prose. Readers who have not studied this point will be surprised at the width of his influence in the Middle Ages and later. A great amount of research is compressed into these few pages.

In his preface, Prof. Summers thanks his publishers for publishing a book which is not likely to meet with a large sale. We hope his expectation will be disappointed. If the book meets with the sale it deserves, neither ought to be dissatisfied.

NATURE PICTURES FOR SCHOOLS.[1]

BROWNING'S lines:

> We're made so that we love
> First when we see them painted, things we have passed
> Perhaps a hundred times nor cared to see,

may well be laid to heart by all teachers, but they have a special significance for those directing work in nature-study. One can imagine that such pictures as Mr. Thorburn's might reveal, with a veritable thrill of pleasure, the surpassing beauty of these common wild flowers and insects to a child who had previously regarded them as mere weeds and pests. To arouse such interest is half the battle. It would be difficult to praise these pictures too highly. The subjects have been selected with judgment, each month from April to September being represented by a picture comprising two wild flowers and two butterflies or moths. As works of art they are worthy of Mr. Thorburn's reputation, and as examples of three-colour printing the sheets submitted are—as an experienced craftsman to whom we have shown them assures us—of an exceptionally high order.

Messrs. Cassell's "Nature" Copies are issued as "aids to nature-study, brushwork, and drawing." We can recommend them as cheap and trustworthy helps to the identification of wild flowers. It would be a mistake, however, to use them as copies for either drawing or brushwork; for, in the first place, the drawing of such subjects from flat copies is always a rather futile business. In the second place, the colours of some of the sheets are so crude, and the "register" so careless, that they would serve better as warnings than as models to young artists. We believe these pictures have appeared already as book illustrations and as wall-sheets. They should prove no less useful in their new form, if employed with discretion.

Mr. Crump's admirable photographs have a more directly scientific object, since their purpose is to supply typical illustrations of British plant-ecology—"the study of plants in their homes." Most of the recognised "associations"—moorland, grassland, woodland, maritime, aquatic, and marsh—are represented in typical aspects, and by a number of pictures showing the principal varieties in each. The photographs dealing with the broader aspects of the subject form in many cases beautiful pictures, and furnish illustrations of characteristic British scenery. The more detailed studies, such as the ground-carpet of a wood, have been found more effective as lantern slides, and are only offered in that form. The whole series is to be welcomed as an important contribution to one of the most fascinating branches of botany.

[1] (1) "Longmans' Wall Pictures." Printed in colour from original pictures by Archibald Thorburn. Unframed, 2*s.* 6*d.* net each; in oak frame, glazed, 7*s.* 6*d.* net each; set of 10 in portfolio, £1 10*s.* Descriptive Notes, 6*d.*

(2) Cassell's "Nature" Copies. Twelve packets, each containing ten examples, 6*d.* net each packet.

(3) "Permanent Photographs and Lantern Slides of Plant Associations." 15×12 inches, 8*s.* 6*d.* each; 12×10 inches, 6*s.* each. Lantern slides, 1*s.* 6*d.* each. (W. B. Crump, 4, Marlborough Avenue, Halifax.

THE SPIRIT OF SCIENCE.[1]

"THREADS in the Web of Life" is the title of one of three little books belonging to a series of readable books on big subjects. Each volume is profusely illustrated and is brought up to 1910. Each is intended as a reader; the print and page are clean; the text is simple without being too easy, and the subjects are excellently chosen. But beyond the mere reading-book this series serves to show that science need not be bankrupt. Brunetière's famous phrase is only to the point if the teachers of science accept it. Children (and adults) need more than ever to recognise the patient nobility of a Ross, an Edison, and a Pasteur; and Agassiz's golden saying, "Gentlemen, I have no time to make money," exactly points to the right place from which scientific studies and inventions should be viewed. This side of man's work is emphasised in these little volumes.

[1] "Threads in the Web of Life." By Mrs. M. R. Thomson and Prof. J. A. Thomson. 198 pp. (Macmillan.) 1*s.* 6*d.*

"Tillers of the Ground." By Dr. Marion I. Newbigin. 224 pp. (Macmillan.) 1*s.* 6*d.*

"Wonders of Physical Science." By E. E. Fournier. 198 pp. (Macmillan. 1*s.* 6*d.*

Such subjects as the Balance of Nature, Social Animals, Man as the Hunter, are dealt with; we notice the usual gap in the chapter on Malaria. We know now how malaria spreads; but how and whence does it arise?

"The Tillers of the Ground" is a fascinating little work for those who know the elementary science book only. It does not disdain to notice Virgil, Pliny, and such out-of-date people—usually the predecessors of to-day are as much disregarded as the lower rungs of the ladder, the base degrees by which we did arise.

It is the same with the "Wonders of Physical Science." The discoveries of to-day are brought into vital relation with the toil of the great dead. Archimedes and Galileo, Röntgen and Zeppelin are made familiar figures to the young reader. Of course this means that the teacher must have a good deal of knowledge of his subject: he must read also and be able not to ask but to answer questions.

The series is to be welcomed, as anything is to be welcomed which insists on the worth and nobility of life. While a crowd of books is being issued, uncensored, preaching gloom, it is a treat to turn to a bright, happy set of little books with a wide outlook, which seem to preach *Sursum corda*.

BIBLE TEACHING.

The Life of Our Blessed Lord, from the Revised Version of the Four Gospels. By A. R. Whitham. xiv+364 pp. (Rivingtons.) 3*s.* 6*d.*

A Life of Jesus Christ in Modern English. For the use of schools. Compiled from the Gospels by James Smith. Second edition. 155 pp. (Macmillan.) 6*d.*

St. Luke in the Revised Version. With Introduction and Notes by A. S. Walpole. 188 pp.; with illustrations. (Frowde.) 1*s.* 6*d.*

Cambridge Greek Testament for Schools and Colleges. Galatians. Edited by A. Lukyn Williams. l+160 pp. (Cambridge University Press.) 1*s.* 6*d.* net.

Old Testament History from the Birth of Samuel to the Death of David. By J. M. Hardwick and H. Costley-White. xxiii+188 pp. (Murray.) 2*s.*

The Revised Version, Edited for the Use of Schools: Isaiah I.–XXXIX. Edited by C. H. Thomson and John Skinner. xliv+145 pp. (Cambridge University Press.) 1*s.* 6*d.* net.

The Hebrew Prophets for English Readers. Edited by F. H. Woods and F. E. Powell. Vol. ii. Zephaniah, Nahum, Habakkuk, and Jeremiah. x+240 pp. (Clarendon Press.) 2*s.* 6*d.* net.

Scales without Weights. A Paper on the Mental Attitude of Boys towards Religion. By Alex. Devine. 15 pp. (Smith.) 2*d.*

Stories from the New Testament. By E. M. Wilmot-Buxton. viii+126 pp. (Methuen.) 1*s.* 6*d.*

Where Moses went to School, or Scenes in Ancient Egypt. Where Moses Learned to Rule, or Scenes in the Wilderness. Esther the Queen. By Mildred Duff and Noel Hope. Illustrations by Noel Hope. Three vols., each of 96 pp. (Marshall.)

THE first of the two "Lives" named above is a skilful *contaminatio* of the Synoptics and St. John, with a commentary on orthodox lines; the author believes "that the Creeds supply the only key to the meaning of the Life of Christ." Mr. James Smith has essayed the task of presenting a similar conspectus in English easily understood by Indian pupils; he deals reverently both with his theme and with the language. This is a second edition.

Mr. Walpole's introduction in the St. Luke volume is not bound by tradition: it puts clearly before young readers the person of the writer of the Gospel, and the condition, religious and political, of Palestine in St. Luke's time. Besides illustrations, maps, and plans, the book has a brief commentary on the text and a very useful index.

Mr. Lukyn Williams follows the older view that "Galatians" was addressed to northern Galatia, and he maintains that view in a closely reasoned introduction, which also makes clear the universal, spiritual value of the book. He dates it about the middle of the first century, and in that connection takes note of the opinion that it and the Pauline Epistles in general are writings of the second century. The notes, which constitute the bulk of this scholarly volume, are epexegetical chiefly, though textual notes are also given.

Messrs. Hardwick and Costley-White bring out the importance of the period of Jewish history which lies between the birth of Samuel and the death of David. They have used to good purpose the opportunity afforded by a story of political, literary, and religious evolution to illustrate principles of historical criticism. Incidentally, the doctrine of "revelation" appears as it is now commonly understood. The book, which is the third volume of the series to which it belongs, has a note on the Canon and another on Palestinian geography.

The "Isaiah I.–XXXIX." contains, on a very crowded page very unfit for school use, an "Introduction," R.V. text, and explanatory notes at the foot of the pages. The introduction deals with the implication of the phrases "moral earnestness" and "religious faith" in a manner to make them real even to a schoolboy reader, more especially when he realises their relation to an age of luxury indifferent to spiritual claims.

We are pleased to see the second volume of "The Hebrew Prophets for English Readers," containing Zephaniah, Nahum, Habakkuk, and Jeremiah. Additional to the text are notes and cross-references, a superfluous glossary, a chronology, a full index, and other apparatus for somewhat analytical study; but the editors attach special importance to the typographical manner in which the Prophets' words are presented to the eye and understanding of the reader. The printer has seconded them very well, and the outcome is a distinct success. Each of the four prophets is furnished with a brief introduction, that to "Nahum" being particularly attractive.

The headmaster of Clayesmore states in his pamphlet the schoolmaster's understanding of the boy's point of view respecting religion. It is to be wished that the makers of the "religious difficulty" would listen to Mr. Devine when he urges that the boy learns the reality of religion and sincerity in its practice very much more from the lives of those about him than from "lessons" of an abstract, theological kind, and that religious teaching and worship best find their meaning in the character and life of Jesus. It is *that* which should be operative in a Christian school.

Miss Wilmot-Buxton's New Testament stories are good evidence of the existence of teachers whose professional aptitude is small; who else would require the common-

place connecting passages which string together the various excerpts from the New Testament?

Not even the ill-prepared teacher is a sufficient justification for the appearance of the three books for which Miss Duff and Miss Hope are responsible. All three are bad in conception and in execution; we especially resent the "Esther," which merely vulgarises an Oriental tale by means of tawdry English and most grotesque "drawings." Have the writers no respect for seventeenth-century English and a child's imagination?

METHOD AND MATTER IN GEOGRAPHY.

(1) *Teaching of Geography in Elementary Schools.* By R. L. Archer, W. J. Lewis, and A. E. Chapman. 255 pp. (Black.) 3*s.* 6*d.* net.

(2) *Elementary Regional Geography: Ireland and Great Britain in Outline.* By J. B. Reynolds. 184 pp.; maps, diagrams, and illustrations. (Black.) 1*s.* 4*d.*

(3) *An Elementary Practical Geography for Middle Forms.* By F. Mort. 91 pp.; maps and diagrams. (Blackie.) 2*s.*

(4) *Narrative Geography Readers.* By G. F. Bosworth. Book I., 133 pp.; Book II., 145 pp.; illustrations. (Macmillan.) 1*s.* each.

(5) *Common Commodities of Commerce: Tea.* By A. Ibbetson. 114 pp. *Coffee.* By B. B. Keable. 118 pp.; maps and illustrations. (Pitman.) 1*s.* 6*d.* each net.

TEACHERS of modern geography, whether in elementary or secondary schools, will probably agree that the main test of the success of their work lies in the ability of their pupils to answer the questions Where?, Why there? and How there? with regard to phenomena connected with man and his environment. They will, probably, agree with the authors of "Teaching of Geography in Elementary Schools" that the main purpose of geographical teaching "may be defined as the acquisition by the pupil of a familiarity with the working of geographical principles in concrete cases, and the creation of a more enlightened outlook on other peoples and on certain classes of public events." For the complete discussion of this point of view in regard to teaching practice in elementary schools the teacher can be safely referred to this work, which will prove stimulating and suggestive even, or perhaps most, to those who do not entirely agree with the conclusions which the authors have reached. There is, however, one apparent defect which influences much of the book. In regard to the teaching of geography in secondary schools, the authors appear to deprecate both the demand for "geographical laboratories" and for the inclusion of practical geography in the curriculum as a science subject. They appear to think that this implies a resuscitation of the old physiography, when, as a matter of fact, these demands are the necessary consequence of the application of the principles underlying modern education to the new aspects of geography. The laboratory asked for is an adequately equipped workroom; while the practical work demanded is due entirely to the fact that geography is a coherent body of principles which partake of the nature of scientific truth. In the development of their course the authors suggest that only those geographical principles which refer to physical laws, *i.e.*, those relating to climate, should be considered in the elementary school course, that in all other cases the treatment should be confined to concrete examples in place of abstract principles. The authors admit that, in consequence of this limitation, "few pupils will be able to think out for themselves problems which are ultimately dependent on geographical considerations: but they will be better able to appreciate the arguments of others."

They suggest that the pupils should learn an alphabet for the sole purpose of understanding other people, and not for the purpose of self-expression. Finally, in regard to climate, the treatment is based upon that idea of causation which emphasises the idea of a causal sequence; in consequence of this idea the authors have to face the admittedly difficult problem of teaching the pupil to understand the seasons; they base their treatment of climate upon the sun's movements. Here they attempt to "explain" phenomena which are in themselves of common occurrence, and therefore observable by the pupils, in terms of phenomena which are not observable directly and are dependent upon scientific principles, which are abstract. They regard it as necessary that the pupil should have some appreciation of the solar system. It may be suggested that it is not necessary to regard the sun as the prime cause of climatic variations, that for beginners the facts regarding climate in relation to man may be studied without specific reference to the sun; and at the same time the authors might consider the implication in their book that the work of teaching in elementary schools is necessarily and essentially didactic, that, contrary to the whole trend of thought in regard to school work, the pupils should be passive, should memorise rather than think, should absorb an atmosphere rather than create by activity a habit of mind.

"Regional" geography may be regarded as a result of a protest against the older geography, which consisted of names plus "interesting" facts; and the author of the new regional geography before us (2) has produced a compromise between the old and the new. There are many names with the facts which are, it is assumed, of interest; *e.g.*, "seven little stone churches and a round tower were built at Glendalough long ago." There is also a definite effort to build up a connected picture of Ireland, with certain reasons or "explanations" for the facts noted; but it might be asked whether it is ever advisable in a regional geography to give an explanation without providing for the pupil sufficient data to verify the explanation for himself. There are many suggestions at the ends of the lessons for the exercise of the pupils' activities.

Mr. Mort's "Practical Geography" (3) deals with compass directions, latitude and longitude, contours, map projections, the record by means of maps of weather, elevation, rock structure, climate and vegetation, and with surveying. It is doubtful whether all of this can be legitimately considered to be geography, and whether some of the work does not offend against the canon that scholars should not be taught a craft, while possibly some would consider that for practical work Mr. Mort tells too much and leaves too little to the pupil's own investigation; but the exercises will certainly provide a corrective against too didactic a method of teaching geography.

In the teaching of young children it is admitted that stories of children and animals in distant lands, and that a close connection between history and geography, are valuable ways of introducing an outlook upon the geographical facts of the world. This method is successfully exemplified in Mr. Bosworth's "Narrative Geographies" (4), which should be seen by all teachers of quite young pupils.

A useful device for the upper forms consists in a *seminar* discussion of papers read by individual pupils upon definite pieces of geographical investigation, and for this purpose the geographical library and museum should provide most of the raw material; the two books on "Tea" and "Coffee" (5) should, on this account, find a place in such libraries.

RELATIONS BETWEEN UNIVERSITY AND SCHOOL EDUCATION.[1]

To preside over this Section is to incur a responsibility which I confess somewhat alarms me; for the President may, by virtue of his temporary office, be regarded as speaking with authority on the subjects with which he deals. Now, it is my desire to speak about University education, and for this purpose I must say something of school education; but I would have it understood that I really know little about the actual conduct of modern school teaching. One may read books which describe how it should be conducted, but this is a very different thing from seeing and hearing the teacher in his class; and I fear that personal recollections of what teaching in preparatory and public schools was like from thirty to forty years ago do not qualify one to pose as an intelligent critic of the methods which now prevail.

Human nature, however, has not changed much in the last forty years, and if, in considering the relations between University and school education, I can confine myself to general principles, based upon the difference between boys and men, I trust that I may not go far wrong.

I propose first to consider some general relations between teachers and their pupils, and then explain what, in my opinion, should be the change in the method of teaching, or at any rate in the attitude of teacher to pupil, which should take place when the scene changes from school to University.

First as to general relations between teachers and their pupils.

Educational systems necessarily prescribe the same methods for different teachers, and, being made for the mass, ignore the individual. But happily, in spite of the attempts to formulate methods of instruction and to make precise systems, there are many, and those perhaps some of the most successful, in the army of earnest school teachers who are elaborating their own methods.

Now among all the changes and varieties of system and curriculum there is one factor which remains permanent and is universally confessed to be of paramount importance—the individuality of the teacher and his personal influence upon the pupil. It is therefore a healthy sign when school teachers who have been trained on one system begin to develop their own methods, for in this they are asserting their individuality and strengthening that personal influence which is the real mainspring of all successful education.

Personal influence is, of course, not only a matter of intellectual attainments; it appears to me, however, that at the present time so much is made of the duty of schools to aim at the formation of character that there is an unfortunate tendency to regard this duty as something distinct from the other functions of a master, and as independent of intellectual qualifications. Among the first qualities now demanded of a master in a public school for boys are manliness, athletic skill, and a hearty and healthy personality, and these are often regarded as compensating for some lack of intellectual equipment. I suspect that there is a similar tendency in schools for girls. And yet I think it will be found that the only permanent personal influence is really wielded by teachers who exercise it through intellectual channels, and that those who acquire intellectual authority will generally succeed in training the characters as well as the minds of their pupils.

[1] From an address delivered to the Educational Science Section of the British Association at Sheffield, September 1st, 1910, by Principal H. A. Miers, M.A., D.Sc., F.R.S., President of the Section.

On the other hand, the master who is not up to the proper intellectual standard will soon be found out by his cleverer pupils, and will lose influence, whatever may be the charm of his character.

The formation of character, so far as it can be distinguished from intellectual training, is largely worked out by the boys themselves in any public school in which healthy tradition and a sound moral atmosphere are maintained, although it is true that these traditions depend upon the character and personality of the teachers.

The educational value of the personal and intimate association with one and the same teacher throughout the school or University career is officially recognised in the tutorial system at Eton, Oxford, and Cambridge. It has generally led to excellent results, provided that the tutor possesses the right qualities and that pupil and tutor do not happen to be two incompatible personalities; but the results may be well-nigh disastrous where there happens to be antagonism between the two, or where the tutor does not realise his opportunities and responsibilities. I have known some tutors who only excited a distaste for learning in their pupils, and others who entirely neglected or abused the high trust which had been committed to them; but far more, I am glad to say, who have not only exercised the most profound influence for good on their better and cleverer pupils, but also inspired intellectual interest in the most unpromising of them. Although such a tutorial system does not enter fully into the scheme of other schools and Universities, and therefore a student does not usually remain long under any one teacher, it must be within the experience of most persons to have come for a time at least under the influence of a teacher who has inspired real enthusiasm for learning and from whose lips the instruction, that might from others have been a trial, has become an intellectual treat.

It is given to comparatively few to exert this powerful and subtle influence in a high degree, for it is a gift confined to a few rare natures. All the more important is it, therefore, to ensure that an effective personal influence may play its part in the intercourse between ordinary teachers and ordinary pupils in the customary routine of school and University life.

How, then, is the proper personal and sympathetic relation to be established between teacher and pupil, so that the individuality of the one may call out the character and the effort of the other? Those who inquire of their earliest school reminiscences will probably recollect that the teachers who obtained a real hold upon them did so by virtue of the power which they possessed of arousing their intellectual interest. I would ask you for a moment to analyse the character of this interest.

In the young child I believe that it will be found to be mainly that of novelty: with him "this way and that dividing the swift mind," sustained thought, or even sustained attention, has not yet become possible; the inquisitive and acquisitive faculties are strong; and every new impression awakens the interest by its novelty quite apart from its purpose. You have only to watch and see how impossible it is for a young child to keep its attention fixed even upon a game such as cricket or football to realise how still more difficult it is to keep his attention fixed upon an intellectual purpose.

To quite young children, except to those who are unfortunately precocious, even an impending examination is not a permanent object of anxiety.

Now contrast the aimless interest which can be aroused in any young child's mind by the pleasure of a new impression, a new activity, or a new idea, with that which

appeals, or should appeal, to the more mature intellect of an older student. With him it is not enough that the impression or the idea should be new; if it is to arouse interest it must also direct his mind to a purpose. This is to him the effective interest of his games or sport; in the game the desire to succeed or to win is the animating purpose, just as the expectation of catching a fish is the interest which keeps the angler's attention fixed for hours upon his line. In both the desire is fostered by the imagination, which maintains a definite purpose before the mind.

It is sometimes forgotten that as he grows the pupil is no longer "an infant crying for the light," but has become a man with "splendid purpose in his eyes."

While, therefore, it should be the aim of a teacher of young children to set before them the subjects of their lessons in an attractive manner, so that the novelty is never lost, and not to weary their active and restless minds with too sustained an effort, it should at a later stage be the teacher's aim to keep the object and purpose of the new fact or idea as constantly as possible in view, and not to distract the ardent mind with purposeless and disconnected scraps of learning.

I ask you to bear this distinction in mind, for it is a principle which may guide us in differentiating University methods from school methods of education.

The distinction need not involve us in a discussion of the "Ziel-Angabe" in elementary education, for that is rather a question of keeping the interest alive during each lesson than of maintaining a permanent purpose in view throughout a course.

The much discussed heuristic method as applied to very young children does, no doubt, fulfil this object so far as it provides the inquisitive mind with novelty instead of a set task, but so far as it makes the purpose more prominent than the process it may become a method more suited to the adolescent or the adult mind than to that of the young child.

I can fully realise that a most difficult and anxious time for the teacher must be that of the maturing intellect, in the interval between childhood and the close of the school career, when the method and spirit of the teaching must to some extent gradually change with the changing mental characteristics of the pupil. But, whatever may be the right methods of teaching children of ten and young men and women of twenty, many of our failures are due to one or both of two prevalent mistakes: the first, the mistake of teaching children by methods that are too advanced; the second, that of teaching University students by methods that are better adapted for school children. It is with the latter that I wish to deal in this address; but we may in passing remind ourselves that when young men and young women are sent straight from the University to teach children with nothing but their University experience to guide them, it is not surprising that they often proceed at first on wrong lines, and as though they were dealing with University students.

The difficulty of divesting oneself of the mental attitude and the form of expression familiar in University circles, if one is to become intelligible even to the higher classes in a school, is betrayed by the unsatisfactory nature of many of the papers set by University examiners to school children. The teachers complain, and rightly complain, that there is often an academic style and form about them which just make them entirely unsuitable for the child.

It is, of course, hopeful that a diploma in pedagogy or some evidence that they have received instruction in method is now generally required of those who are to become teachers in schools. It seems to me, however, somewhat curious that, while efforts are now being made to give instruction in educational method to such persons, no similar effort is made to give instruction in more advanced methods to those who are called upon at the close of their undergraduate career to become University teachers, and that in consequence many of them have no method at all.

This may be a matter of comparatively small importance to those who possess, not only the necessary knowledge, but also the natural gift of personal influence and the power of inspiring those whom they teach. But for those who are not blessed with these powers it may be almost as difficult to fall into the ways of successful University instruction after the sudden transformation from student into teacher as it is for those who become teachers in schools.

Granting, then, that there should be a radical difference between the ways of school and University teaching, and that there is at present an unfortunate overlapping between the two, let me next consider how the distinction between the intellectual interest of a child and the intellectual interest of a man may guide us in adjusting our methods of teaching when students pass from school to the University.

A tenable, perhaps even a prevalent, view concerning a liberal school education is that its chief purpose is not so much to impart knowledge as to train the mind; indeed, some teachers, influenced, perhaps, in the first instance by the views of Plato, go so far as to think that no subject which is clearly of direct practical use should be taught as such at school. This view they would carry to the extent of excluding many obviously appropriate subjects from the school curriculum, whereas almost any subject may be made an intellectual training; this being a question not of subject, but of the manner in which it is taught. In any event, if the scheme of intellectual training be adequately fulfilled, the period of mental discipline should come to an end with the close of school life, and the mind should then be able to enter upon new studies and to assimilate fresh knowledge without a prolonged continuation of preparatory courses. Indeed, the professed object of entrance examinations to the University is to exclude those whose minds are not prepared to benefit by a course of University study, and to admit only those who are sufficiently equipped by previous training to do so. An entrance examination, then, should not be merely a test of whether a boy or girl has learnt sufficient of certain subjects to continue those subjects in particular at the University; and yet it has unfortunately come to be regarded more and more as performing this function instead of being regarded as a test whether the student is generally fit to enter upon *any* University course. The result is that an entrance examination tends to become a test of knowledge rather than a test of general intelligence; merely one in an organised series of examinations which endeavour to ascertain the advancing proficiency in a limited number of subjects, and therefore tend really to encourage specialisation. Specialisation is not to be prevented by insisting on a considerable number of subjects, but rather by teaching even one subject in a wide spirit. Another result is that the entrance examination belongs properly neither to the school course nor to the University course; if it is taken at the age of sixteen, the remainder of the school career tends to be devoted to University work, which should not really be done at school; if it is taken after leaving school this means that work is being done at, or in connection with, the University which ought to be done at school. It is certainly

true that for various reasons a vast deal of education is now being carried on at the Universities which should belong to school life, and, moreover, is being carried on by methods which are identical with those pursued at school. It is equally true that, owing to the early age at which matriculation examinations or their equivalents may be taken, many schools are now asking that at the age of eighteen or nineteen a school examination may be held which shall be an equivalent, not for matriculation, but for the first degree examination at the University. This would really imply that schools should be recognised as doing University work for two years of their pupils' careers—surely a most illogical procedure, and one which supports my contention that there is now very serious overlapping, for it assumes that the work for the first degree examination can be carried on either at the school or the University, and therefore that there is no difference in the methods of the two.

An increasing number of candidates actually present themselves from secondary schools for the external intermediate examination of the University of London; in 1904 there were about 150; in 1909 there were nearly 500 such candidates.

There will always be exceptional boys and girls who reach a University standard, both of attainments and intelligence, long before they arrive at the ordinary school-leaving age. Let them either leave school and begin their University career early, or let them, if they remain at school, widen their knowledge by including subjects which are not supplied by the more rigid school curriculum designed for the average pupils; but let them not cease to be taught as school pupils. It is equally certain that there will also be boys and girls whose development is so slow that they barely reach the University standard when they leave school; yet some among them are the best possible material and achieve the greatest success in the end. For such persons an entrance examination will be required at the age of eighteen or nineteen; but I think it is unfortunate that this should be the same as that which quicker pupils can pass at the age of sixteen or seventeen, for an examination designed for the one age can scarcely be quite satisfactory for the other.

I confess that the whole matter is inextricably involved with the question of University entrance examinations. But to enter upon this here would carry us beyond the limits that I have laid down for myself, and it will be more profitable to decide what should be done at school and the University respectively before discussing how the examinations are to be adapted to our purpose. It will be sufficient for me to say that I have been led to the conclusion that matriculation examinations should be designed to suit the capacity of average pupils not less than seventeen years of age, if they are to test the intelligence of those who are ready to enter upon a University course.

Starting, then, with the principle that the period of mental discipline is closed at the end of the school career, and that those who pass to the University come with fair mental training and sufficient intelligence, let me inquire what should be the relation of University teaching to that which the student has received at school.

Under present conditions the schools which aim at sending students to the Universities endeavour to give a general education which will fit their pupils to enter either upon a University course or upon whatever profession or occupation they may select on leaving school. They do not confine the teaching of any pupil to preparation for a special profession or occupation, and they do not generally encourage special preparation for the University.

Now contrast what happens to the pupils leaving such a school to enter a profession or business with what happens to those who proceed to the University. The former pass into an entirely different atmosphere; they are no longer occupied with exercises and preparatory courses which serve a disciplinary purpose; they are brought face to face with the realities of their business or profession, and, though they have to gain their experience by beginning at the lower and more elementary stages, they do actually and at once take part in it.

The University student, on the other hand, too often continues what he did at school; he may attend lectures instead of the school class, but neither the method nor the material need differ much from what he has already done. Should not the break with school be as complete for him as for his schoolfellow who goes into business? Should he not be brought face to face with the actualities of learning? After his years of preparation and mental drill at school should he not, under the direction of his University teachers, appreciate the purpose of his work and share the responsibility of it?

Let me take, as an illustration, the subject of history. A public-school boy who comes to the University and takes up the study of history should learn at once how to use the original sources. It will, of course, be easier for him if he has learnt the rudiments of history and become interested in the subject at school; but, if he is really keen upon his University work, it should not be absolutely necessary for him to have learnt any history whatever. In any case, if he has received a good general education and has reached the standard of intelligence required for University work, he ought to be able to enter at once upon the intelligent study of history at first hand; his teachers will make it their duty to show him how to do this; their lectures and seminars will illustrate the methods of independent study, and will make the need of them clear to him. If, as is probable, some acquaintance with one or more foreign languages be necessary, he will take instruction in them as an essential part of his history course, in order that he may acquire the needful working knowledge, and to learn something of them with a definite purpose will be to him far more interesting and profitable than to study them only for linguistic training, as he would have been compelled to do at school. After all, this is what would be done by his schoolfellow who goes into business and finds it necessary, and probably also interesting, to acquire some knowledge of the particular foreign language required in the correspondence of his firm. It will, of course, be all the better for a University student of history to have acquired some training at school in the rudiments of history both ancient and modern, together with the knowledge of classics which is necessary for the former, and of modern languages which is necessary for the latter. But there is not space in the school curriculum for all the subjects that may be required either for the University or for the business of life; the best that can be done is to give a good all-round training and to foster a marked taste or ability where it exists by allowing the boy or girl to include the subjects which are most congenial to them in the studies of their last two years of school life, as I have already suggested, provided that mere specialisation is not encouraged at school even towards the end of the school career.

The University course might then become a more complete specialisation, but of a broad character—the study of a special subject in its wider aspects, and with the help of all the other knowledge which may be necessary to that purpose.

The University teacher will also differ from the school

teacher in his methods, for it will be his business not so much to teach history as to teach his pupil so to learn and study history as though it were his purpose to become an historian; in so doing he will have opportunities to explain his own views and to contrast them with those of other authorities, and so to express his individuality as a University teacher should.

One might choose any other subject as an illustration. In science there should be all the difference between the school exercises, on one hand, which teach the pupil the methods of experiment, illustrate the principles laid down in his text-books, and exercise his mind in scientific reasoning, and, on the other hand, the University training, which sets him on a course involving the methods of the classical researches of great investigators and a study of the original papers in which they are contained, illuminated by the views of his own teacher. He also should awaken to the necessity of modern languages. A boy who, on leaving school, passes not to the scientific laboratories of a University, but to a scientific assistantship in a business or Government department, will very soon find it necessary to go to the original sources and acquire a working knowledge of foreign languages. It is regrettable that under existing conditions a scientific student sometimes passes through his University without acquiring even this necessary equipment. I believe this to be largely due to the fact that he is compelled to spend so much of his time in preparatory work of a school character during the early stages of his University career.

In the literary subjects, and especially in classics, there is, of course, not the same scope for the spirit of investigation which it is so easy to encourage in experimental science. Here the only new advances and discoveries which can appeal to the imagination in quite the same way are those which are being made every year in the field of archæology, and it is therefore not surprising that this subject attracts many of the most ardent students; the methods of the archæologist are more akin to those of the scientific investigator, and his work is accompanied by the same enthralling excitement of possible discovery. For the more able pupils and those who had a natural taste for language and literature no subjects have been more thoroughly and systematically taught for very many years at school, as well as at the University, than the classics; but for the less intellectual children or those who had no natural taste for such studies no methods could well be more unsuitable than those which used to prevail at schools. The grammatical rules and exceptions, the unintelligent and uncouth translation, the dry comparison of parallel passages, the mechanical construction of Greek and Latin verse, produced in many minds nothing but distaste for the finest literature that exists.

With the improved methods now in use Greek and Latin may be, and are, presented to the ordinary boy and girl as living literature and history, and school training in them may be made as interesting as anything else in the curriculum. Upon such a foundation the University should surely be able to build a course devoted to literary, philosophical, historical, or philological learning even for the average student, provided that the University teacher undertakes the task of helping his pupils to learn for themselves, and to pursue their studies with a purpose, not merely as a preparation.

The spirit of inquiry which drives the literary student to find for himself the meaning of an author by study and by comparison of the views of others is really the same spirit of inqury which drives the scientific student to interpret an experiment, or the mathematical student to solve a problem. Only by kindling the spirit of inquiry can teaching of a real University character be carried on. Give it what name you will, and exercise it in whatever manner you desire, there is no subject of study to which it cannot be applied, and there are no intelligent minds in which it cannot be excited.

The distinction that I have in my mind between University and school teaching may be expressed in this way. At school no subject should be taught to a class as though it were intended to be their life-work; to take an example, it too often happens at present, owing really to excessive zeal on the part of school teachers, that mathematics is taught as though each member of the class were destined to become a mathematician; consequently only the few scholars with a real aptitude for mathematics become interested, and the remainder are left behind. On the other hand, at the University each subject should be studied as though it really were the life-work both of teacher and student. Thus, to take the same subject as an illustration, the mathematical student will attend the full courses of his professors and will follow them with the interest of a mathematician; whereas for the scientific student it will only be in those branches of mathematics which concern him that the interest of his special science will put him on terms of equality with the mathematical student. If I may choose an illustration which is familiar to myself, any student of mineralogy can easily be interested in and benefit by a course in spherical trigonometry, because it is one of the tools of his trade, but to send him to lectures on differential equations would be only to discourage him. On the other hand, the student of chemistry would rather be interested in the latter. To each of them certain branches of mathematics as taught by an ardent teacher afford a real intellectual training, but neither would gain much if compelled to follow a general University course of mathematics designed for mathematicians.

That a boy or girl should for a year or even two years before leaving school be practically confined to one subject in preparing for scholarship examinations, and should before entering the University be examined in that alone, appears to me to be contrary to all the best traditions of school teaching, and to the often expressed desire of the Universities to ensure a good general education in those whom they admit. There should, I think, be no scholarship examination which does not include several of the subjects of a normal school curriculum, however much additional weight may be given to any of them. Although it may be necessary that University entrance scholarships in one subject should be given either to encourage its study or to discover those who have a special aptitude, yet, so far as scholarships are intended to be rewards for intellectual pre-eminence, they should, I think, be directed to general capacity, and not be used as an encouragement to limited study. From what I have already said it will be clear that I do not attach much importance to special preparation at school for those who intend to proceed to the University. If a boy has a very special taste or aptitude, it should have abundant opportunity for displaying and exercising itself at the University, provided only that it has not been stifled, but has been given some encouragement in the school curriculum. I understand, for example, that those who teach such a subject as physiology at the University would prefer that their pupils should come to them from school with a general knowledge of chemistry and physics rather than that they should have received training in physiology. With the present modern differentiation into a classical and modern side, or their equiva-

lents, the ordinary school subjects should be sufficient preparation for any University course if they are not mutually strangled in the pressure of an overcrowded curriculum.

To be fair, however, I must state another view. A very experienced college tutor who has had previous valuable experience as a master in a public school, tells me that in his opinion the real problem of the public schools is the "arrest of intellectual development that overtakes so many boys at about the age of sixteen." "There are few public schools," he says, "whose fifth forms are not full of boys of seventeen or eighteen, many of them perfectly orderly, well-mannered, and reasonable, in some sense the salt of the place, exercising great influence in the school and exercising it well, with a high standard of public spirit, kindly, and straight-living, in whom, nevertheless, it is difficult to recognise the bright, intelligent, if not very industrious, child of two or three years before."

He thinks that there is a real danger of degeneration at this age, owing, for one thing, to the manner in which the boys are educated *en bloc*; up to a certain age boys can be herded together and taught on the same lines without great harm being done, but after a certain time differentiation begins to set in. The school curriculum, however, does not admit of being adjusted to suit the dawning interests of a couple of hundred boys; and he sees no cure for this difficulty except a considerable increase in the staff and a corresponding reduction in the size of the forms. But he thinks that much may be done by an alteration in the system of matriculation examination, which sets the standard at the public schools. He would make this consist of two parts: an examination coming at about the age of sixteen and well within the reach of a boy of ordinary intelligence and industry, and comprising the ordinary subjects of school curriculum at this age; he would then let the boy leave the subjects from which he is not likely to get much further profit and begin to specialise for the remaining two or three years, say, in two subjects, which would then be the material of the second examination. In this way they would make a wholly fresh start at a critical age, and he thinks that the bulk of the boys would probably find this a great advantage.

I quote this opinion because it shows that an experienced schoolmaster regards it as highly desirable that at a certain period in a schoolboy's career a real change should be made in his curriculum, and I have expressly stated that I find it difficult to express an opinion upon this particular educational period.

What should be the exact nature of the teaching before and after the age of sixteen or seventeen for the mass of ordinary boys I would prefer to leave to the decision of those who are best able to judge. I think it highly probable that there should be a considerable alteration of curriculum at the critical age. But, if a break and change of subject are required at this age, I believe that a yet more complete change is required at the later stage when the boy goes to the University, and that school methods should then be entirely replaced by University methods—not because there is then a natural change in the mental powers of the student, but because it is the obvious stage at which to make the change if we are to abandon preparatory training at all. Should it be proposed that the change ought to be made at sixteen, and that after that age something of the nature of University methods should be gradually introduced, my fear is that this would only lead to the perpetuation of school methods at the University.

An interesting question which deserves to be very seriously considered is the question, What sort of school education affords the best preparatory training for the University? I have often heard it asserted that, if a boy is capable of taking up at the University a course which is entirely different from his school course, he will generally be found to have come from the classical side and not from the modern side. An ordinary modern-side boy is rarely able to pursue profitably a literary career at the University, whereas it often happens that ordinary classical-side boys make excellent scientific students after they have left school. I am bound to say that this is, on the whole, my own experience. It suggests that a literary education at school is at present a better intellectual training for general University work than a scientific education. If this be so what is the reason?

There are no doubt many causes which may contribute. In some schools the brighter boys are still retained on the classical side while those who are more slow are left to find their way to other subjects; and some whose real tastes have been suppressed by the uniformity of the school curriculum turn with relief to new studies at the University and pursue them with zeal. But the facts do also, I think, point to some defect in the present teaching of school science whereby a certain narrowness and rigidity of mind are rendered possible. This may be partly due to the lack of human interest in the teaching of elementary science; the story of discovery has a personal side which is too much neglected, though it is more attractive to the beginner and might with advantage be used to give some insight into the working of the human mind and character. Moreover, it would form an introduction to the philosophy of science which is at present so strangely ignored by most teachers.

But another noteworthy defect is the absence of that mental exercise which is provided by the thoughtful use and analysis of language.

I believe that the practice of expressing thoughts in carefully chosen words, which forms so large a part of a good literary education, constitutes a mental training which can scarcely be surpassed, and it is unfortunately true that in the non-literary subjects too little attention is paid to this practice. In school work and examinations a pupil who appears to understand a problem is often allowed full credit, although his spoken or written answer may be far from clear. This is a great mistake. A statement which is not intelligibly expressed indicates some confusion of thought; and, if scientific teaching is to maintain its proper position as a mental training, far more attention must be paid to the cultivation of a lucid style in writing and speaking.

The various Universities seem fairly agreed upon the subjects which they regard as essential to an entrance examination—subjects which may be taken to imply the groundwork of a liberal education. Among these is English: and yet of all the subjects which children are taught at school, there is none in which such poor results are achieved. It may be taught by earnest and zealous teachers; the examination papers are searching, and seem to require a considerable knowledge of English literature and considerable skill in the manipulation of the language, and yet the fact remains that the power of simple intelligible expression is not one that is possessed by the average schoolboy and schoolgirl. It is the most necessary part of what should be an adequate equipment for the affairs of life, whether the pupil passes to the University or not, and yet it is, on the whole, that which is least acquired.

Although it is true that the intelligent reading and study of the great masters should assist in the acquisition of a

good style, it is equally true that, if they come to be regarded as a school task, they are not viewed with affection, especially in these days of crowded curricula, when there is little leisure for the enjoyment of a book that requires deliberate reading. If the modern strenuous curriculum of work and games has abolished the loafer, it has also abolished leisure, and has therefore removed one of the opportunities that used to exist for the cultivation of literary and artistic tastes and pursuits by those to whom they are congenial. The art of expressing one's ideas in simple, straightforward language is to be acquired not so much by study as by practice. There is no essential reason why children should write worse than they speak; they do so because they have constant practice in the one and little practice in the other. Our grandparents felt less difficulty in expressing themselves clearly than we do ourselves: of this their letters are evidence. It may have been partly due to the fact that they had more time and encouragement for leisurely reading, though they had not so much to read; but I believe that the letters which they wrote as children were their real education in the art of writing English. Much would be gained if boys and girls were constantly required to express their own meaning in writing. The set essay and the *précis* play a useful part, but do not do all that is needed. Translation does not give quite the necessary exercise. What is required is constant, with certain periods of conscious, practice, and that is only to be obtained by making every piece of school work in which the English language is used an exercise in lucid expression. Very few paragraphs in anything written by the ordinary schoolboy—or, for the matter of that, by the ordinary educated Englishman—are wholly intelligible, and teachers cannot devote too much pains to criticising all written work from this point of view. If we first learnt by practice to express our meaning clearly we should be more likely to acquire the graces of an elegant style later. I must add that I believe the training in the manipulation of words would be improved if all children were required to practise the writing of English verse—not in efforts to write poetry, but narrative verse used to express simple ideas in plain language—and I believe that this would enable them the better to appreciate poetry, the love of which is possibly now to some extent stifled by the pedantic study of beautiful poems treated as school tasks.

In such a subject as English composition, in which reform is so badly needed, something, perhaps, would be gained by an entire break with existing traditions—a break of the sort which would be required if it became suddenly necessary to provide for an entirely new type of student.

I am conscious that this address is lamentably incomplete in that it is concerned only with the manner of University teaching, and scarcely at all with its matter, and that, to carry any conviction, I should address myself to the task of working out in detail the suggestions that I have made. But this would lead me far beyond the limits of an address, and I am content to do little more than touch the fringe of the problem. Reduced to its simplest terms, this, like so many educational problems, involves an attempt to reconcile two more or less incompatible aims.

The acquisition of knowledge and the training of the mind are two inseparable aims of education, and yet it often appears difficult to provide adequately for the one without neglecting the other. If childhood is the time when systematic training is most desirable, it is also the time when knowledge is most easily acquired; if early manhood is the time when special knowledge must be sought, it is also the time when training for the special business of life is necessary. To withdraw from the child the opportunities of absorbing knowledge may be as harmful as it is unnatural; to turn a young man or young woman loose into a profession without proper preparation is cruel, and may be disastrous. And so we get the battle of syllabus, time-table, scholarships, examinations, professional training, technical instruction, under all of which lies the disturbing distinction between training and knowledge.

THE WELSH INTERMEDIATE SCHOOLS.

THE report of the Board of Education on the schools under the Welsh Intermediate Act (1889) for the year 1909 is now available. In the autumn will be celebrated the coming of age of the Welsh intermediate educational system, and naturally the report before us will be scrutinised with the keenest interest. When meetings of congratulation on "attaining the majority" are held, the report will be, without doubt, the subject of much discussion, for, as has been said in one London morning newspaper, it contains "severe criticism." Just as the Welsh educational authorities are preparing to rejoice in the success of their democratic system, the Board of Education presents its report, quoting the adverse points in the criticisms of examiners on English composition and literature, botany and geography. The position of Greek is described as unsatisfactory, and the under-study of Welsh, it is more than hinted, is not made up by the alternative study of French.

The Board of Education report also makes more general adverse criticism—"lack of intelligence," and the sentence, "efforts to apply ordinary common sense were seldom made," words used by an examiner of one subject, are borrowed by the Board to describe "pupils examined in every subject." This, the report goes on to say, is "the most serious criticism that can be made." The chief suggestion made by the Board, in view of these criticisms, is, as we have already said, one which will arouse much discussion—that the Central Welsh Board should consider to what extent its rigid examination system may be the cause of the "wooden and unintelligent type of mind of which its examiners complain."

The subjoined extracts will indicate the chief features of the report.

In this year's report, the chief inspector of the Central Welsh Board gives a brief, but very suggestive, explanation of the examination system, which is the most characteristic as well as the most dominating feature of modern secondary education in Wales. "The standard maintained at the Senior Certificate examination," he says, "is determined by the requirements of those public bodies from whose examination the Senior Certificate secures exemption." The advantage aimed at by the examination is to simplify school organisation by substituting one external examination for many; but the aim is only partially attained, as alternative papers have to be set to suit the requirements of various public bodies who recognise the certificate. The disadvantages of this system are obvious:

(1) As the Senior Certificate examination, which is practically the leaving examination of the school, requires "a carefully organised course of instruction extending over a period of not less than four years," and as the length of stay is far below what it should be, overpressure is inevitable.

(2) This overpressure, with its attendant feature in many cases of over-anxiety, is especially to be deprecated in the case of girls.

(3) Instead of testing the average of classes which are not specially drilled for examinations, the examination becomes the difficult goal to attain which the school is always consciously tending. This result is made still more certain by the competition between schools for certificates, a competition which headmasters, rightly or wrongly, believe that governing bodies regard as the test of the efficiency of the school, and which the Central Welsh Board appear to foster by their not infrequent comment—"The Board will expect better examination results next year"—which occurs no fewer than fifteen times in their reports of the last two years.

(4) As the energy of the schools is given its direction by one examination, all the schools have become schools of the same type; adaptation of the schools to the special circumstances becomes difficult, if not impossible; originality on the part of headmasters finds no scope; the few experiments towards differentiation that are made are made at the cost of getting poor examination results, which, as already pointed out, involve the school in the risk of a censure which may be undeserved, and in any case is only too certain to aggravate the existing condition of things.

The most apparent weakness in Welsh intermediate schools is the poverty of the English which the great majority of the pupils write. The examiner in English literature detects a serious lack of appreciation of literary points, and finds it "difficult to conceive that the various causes producing the power and beauty of some of the most striking passages had been entirely passed over by the students in their reading." The examiner in Welsh reports that "sufficient attention has not been paid to the English idiom." The examiner in French emphasises the fact that "a great majority of pupils at all stages showed an insufficient command of English," and adds (in reference to the senior stage), "it was often difficult to decide whether the pupil really understood the passages owing to his awkward way of expressing himself"; and again, "the orthography and English of a large number of scripts were very poor indeed"; and (in reference to the junior stage) "few schools seem to have a sufficient command of English to be able to produce at the same time an exact rendering and a good piece of English."

One note is struck by nearly all the examiners with painful monotony—it is the complaint of a general lack of intelligence in the papers. The minds of the children seem to be very mechanical; their memory is overburdened where the reasoning power should have been developed; there is a depressing want of originality and a general inability to apply their knowledge to anything that is new to them. The examiner in English complains that "terms . . . were frequently used in mechanical and unintelligent fashion"; the examiner in Welsh literature comments on "the very mechanical nature of the answers"; the examiner in history once more directs attention to the "repeated attempts to reproduce dictated notes"; the examiner in arithmetic states (in reference to the second paper) that "perhaps the most noticeable feature of the work was the remarkable lack of intelligence with which the questions were attempted"; the examiner in Latin complains that time is given to "memorising explanations of syntactical difficulties" that should be given to "reasoned explanation"; the examiner in French writes in reference even to the senior stage that "in some cases the unintelligent nature of the work was amazing." In physics, "attempts at the mechanical explanation of resonance revealed a lack of clear thinking"; in chemistry, "the accumulation of facts and the mere performing of experiments are encouraged to such an extent that the pupils often lose sight of the necessity of acquiring a firm grasp of theoretical principles"; in botany, "the pupils seemed to have a knowledge of numerous facts, but had not been able to pin them together to form a concrete whole."

From these quotations it would appear that the statement of one of the examiners that "efforts to apply ordinary common sense were seldom made" is applicable to pupils examined in every subject. As this is tantamount to saying that the highest aim of education has been missed, the criticism is very disquieting; it is, in fact, the most serious criticism that can be made. The danger to Welsh education is indeed serious if the schools continue to turn out young men and young women possessing a mechanical knowledge of facts useless for all purposes except examination purposes, but lacking in intellectual curiosity, in originality, in readiness of resource. In this connection the following suggestions are offered for early and earnest consideration:

(i) That teachers in secondary schools should be urged to take the opportunity offered, by summer courses and in other ways, for training or supplementary training. . . .

(ii) That the best teaching available should be devoted to the large lower forms. It is the aim of the elementary schools that those boys and girls who proceed to secondary schools should go there with alert minds and deft hands; unskilful and unsympathetic teaching during the first year of a secondary-school course effectually stops the development of interest and reasoning power, and substitutes the mechanical memorising of facts. . . .

(iii) That independent reading, and independent work under careful supervision, should be encouraged as far as possible in the upper forms. At present the small forms at the top of the schools get too much teaching, to their own detriment and to that of the lower forms which are sacrificed to them.

(iv) That county exhibitions should not be given on the marks obtained in examinations which test the work done during the past five or six years, as is done now. It is the proper function of the university to examine for exhibitions in such a way that promise for the future rather than performance in the past should become the ground for selection.

(v) That the Central Welsh Board should now consider to what extent its rigid examination system may be the cause of the wooden and unintelligent type of mind of which its examiners complain. Elasticity and adaptability of curriculum, and the development of differentiation among schools, are difficult under such a highly centralised system of examinations. . . . The Central Welsh Board would be well advised to rely less upon examination and more upon inspection in carrying out the functions entrusted to it. . . .

There is a danger, without constant watchfulness, that the system of education in Wales may become stereotyped and ineffective. With its virgin soil and freedom from any traditional fetters, the Welsh system was more simple, more elastic, and more progressive than any system could be in England; but at present, with the greater freedom for development obtaining in England, Wales may be in danger of falling behind.

AN EDUCATION COMMITTEE'S APPRENTICESHIP SCHEME.

ACTING on the advice of its Education Committee, the Wandsworth Borough Council has decided to make an attempt to revive the apprenticeship system. A constructive scheme is to be elaborated by the education authority that will enable deserving boys and girls to learn, under proper conditions, directly they leave school, a trade or suitable occupation which the parents will select where possible.

The council thinks that for apprentices the school age should be raised to the age considered necessary in each trade to learn that particular trade and to complete the apprenticeship. Either premium agreements or trade apprenticeships in masters' and manufacturers' workshops are to be instituted, so that the boy or girl can learn the trade or occupation chosen in working conditions and under the supervision of the employers' own foremen. Hours of labour suitable to the trade chosen will be arranged with employers, it being an essential condition that time shall be allowed where desired for afternoon classes on one or two days a week, so that theory can be taught hand in hand with practice.

It is suggested that boys or girls who gain scholarship rewards should first have the option of choosing a scholastic or a trade training; where a trade is chosen, an apprenticeship with an approved employer could be entered into for an agreed term of years. The education authority is considering the scholarship rewards to such children should be an apprenticeship or premium fund for payment to the employers of a suitable premium according to the trade chosen, such premium being returned in the form of weekly wages. It is proposed that children other than those who gain scholarships should have the same privileges so far as vacancies and trades can be found, but in their case the premium, if any, should be advanced by the education authority, and refunded in whole or in part by the parents by agreed instalments.

The apprentices will work the hours customary in the chosen trade, but in every case they will cease work sufficiently early to attend evening classes in technical subjects. The continued employment of the apprentices will be subject to good behaviour and satisfactory progress; in cases of bad conduct or unsuitability the agreement will be mutually cancelled, and a due proportion of the premium money, if any, refunded.

To induce parents to apprentice their boys, the council suggests that the premiums should be kept as low as possible, and think that £10 should be regarded in most trades as a sufficient premium, and that even this sum should be waived wherever the employer will agree to do so. All such apprentices, it is thought, should be subject to inspection by the education authority's representative from time to time in working hours, and that such inspector will satisfy himself that the conditions of employment and training are being fulfilled reasonably on both sides. The employer will report twice yearly as to the conduct, punctuality, and progress of each apprentice. Such wages as shall be agreed upon, and suitable to the trade chosen, will be paid weekly to the apprentices, graduated and increased each year as experience is gained; such weekly wages will be set out in a schedule as part of the apprenticeship agreement. For the purposes of this scheme, the number of boys allowed to each shop by Trades Union rules will be increased as may be mutually agreed.

SCHOOL ATHLETICS.

AMONG the many subjects discussed at the annual meeting of the British Medical Association, held in London during the last week of July, was the subject of athleticism in schools. The association decided to circulate the following statements, which we reprint from the *Times*, and we direct the earnest attention of schoolmasters and schoolmistresses to them.

"(1) A due amount of regular bodily exercise for each individual is one essential element in any complete scheme of education. The fitness, or otherwise, of a pupil to undertake and to benefit by exercise must always be largely determined by the conditions of his everyday life at school. In this connection his diet, the times and arrangement of his meals, the nature, conditions, and duration of the mental work demanded of him, and the amount of healthy sleep secured to him, are all of vital importance.

"(2) All the pupils of any school should be under the personal supervision of a single medical authority, whether this consists of the school medical officer or (as may be advisable in very large schools) of a medical board specially constituted to that end.

"(3) Every boy should be subjected to a thorough medical examination by the school medical authority when he first enters the school. This may reveal obvious defects or disabilities in some instances, and in other cases may show the need for special observation during, at any rate, the earlier years of school life.

"(4) A boy's fitness for physical exertion depends upon his physical and constitutional ability, and is not to be gauged merely by his age, which, taken by itself, is often a misleading criterion of strength and endurance.

"(5) It is most desirable that a course of systematised physical training should be adopted for all boys in schools.

"(6) Careful observation of the behaviour of the new and younger boys during their ordinary games, &c., and of the physical effects thus produced upon them individually, affords a valuable means of estimating the fitness of each for subsequently undertaking more strenuous exertion.

"(7) It is most important that there should be an ample interval (one hour at least) between the end of a substantial meal and the beginning of strenuous exercise. There is clear evidence that the neglect of this elementary rule is responsible for a very large proportion of the evils which have been attributed to over-exertion alone. The nature, quality, and quantity of food, and hours of meals, require careful consideration and adjustment.

"(8) Special caution is required in permitting a resumption of active exercise to convalescents—particularly after diphtheria, influenza (including 'influenzal catarrhs'), rheumatism, and measles, and during a period of rapid growth.

"(9) Paper-chases, school and house runs should be distinguished from races; but so far as they include the element of competition, and, therefore, to some extent, the strain of racing, boys should be selected and grouped for a specified distance in accordance with their physical capacity. The plan of running all boys—the young and the older, the strong and the less vigorous—together, over the same distance, is not to be recommended. Whenever, for any reason, such a plan is adopted, special measures must be taken to ensure that the smaller and weaker boys are not called upon for excessive or too prolonged exertion. Evidence, obtained from a great many schools, upon the results of long-distance races, shows that they very seldom entail risk, provided that the competitors are selected and watched during practice with the care and precautions already indicated.

"(10) Medical examination and skilled supervision are also needed in regard to rowing, boxing, and swimming. Competitions in long-distance diving and in long-distance swimming are dangerous for young adolescents.

"(11) The above considerations as to periodical medical examination and careful individual supervision are equally applicable in the case of girls engaging in active exercises."

HISTORY AND CURRENT EVENTS.

THE Argentine Republic is this year celebrating the centenary of its birth. When, a hundred years ago, as all Englishmen have reason to remember, Napoleon effected that *coup d'état* which apparently set his brother Joseph on the throne of Spain and led to the Peninsular War, Spain fell into such governmental confusion that its South American colonies were in sheer self-defence compelled to organise some local form of independence. That necessity led to a long series of events, of which the incident best known in England is the promulgation of the Monroe doctrine by the United States President of that name in conjunction with the action of George Canning, then the Brito-Irish Foreign Secretary, who described his policy as "calling the New World into existence in order to redress the balance of the Old"—whatever that may mean. It has often been thought strange that in the duel between Great Britain and the Bourbons, which occupied the central twenty-five years of the eighteenth century, while British conquests were complete in North America against the French, this country never gained any foothold against the weaker Bourbons in South America. But in the nineteenth century we effected by commerce, more certainly than by war, that conquest of South America which we often contemplated. Argentina is largely financed by British capital. Where does Bovril come from?

WHAT can be effected by other means than war is known, not only in South America, but in South Africa. Englishmen and their fellow-subjects in these isles and in the colonies will long remember the close of the nineteenth century and the beginning of its successor. Queen Victoria died before the end of a long, sad struggle between the two European peoples who had exploited the resources of South Africa, and Louis Botha was then seeking, though in despair, to gain for himself and his compatriots the rule of those wealth-producing districts. We all know the story of that conflict and how it ended. Because we commanded the sea, and had far larger resources to draw upon, we in the end wore down the strength of the descendants of Huguenot refugees and Dutch farmers, and at the appropriately named Vereenigung our foes acknowledged their defeat. And now? Owing to that instinct for compromise and practical adjustment which seems to be the special gift of our race, Louis Botha *does* rule South Africa in a sense of which, ten years ago, he probably never dreamed. We were often asked then, What do you think of the war? and we answered, Wait thirty years. Only ten have gone, and we seem now to have means of answering the question.

SEVENTEENTH-CENTURY Englishmen and eighteenth-century Frenchmen used to inquire, on *a priori* grounds, what is the origin of kingship? Modern historians ask a more practical question: How and by whom have kings been made? They think of the shield-raised warrior of Teutonic tribes, or recall the decision of Pope Zachary in 752 on the question of the Frankish kingship. Among later instances, we may mention the kingship in Prussia granted to the Hohenzollern by Emperor Leopold I., the kingship of Sardinia granted to the Duke of Savoy by a treaty of Utrecht and its sequel, the kingship of Rome given to a baby by his Corsican-born father, and the kingship of Italy given to the King of Sardinia by the peoples of the peninsula. What is a king? and who has the right to make one? What is the difference between a king of a people and a king of a country (*e.g.*, King of the French, King of France)? Such are the questions, such the reminiscences, raised in our minds as we read that there is to be another king in the Balkan Peninsula, he, namely, of Montenegro; or is it to be "of the Montenegrins"?

THE movement of which the Montenegrian kingship is a symptom is decentralising, and in south-eastern Europe there is so great a difference between the populations, racial and religious, that we cannot wonder at the changes in the map of Turkey which have come about since we learnt geography at school. But across the Atlantic these same peoples have a different history. A recent observer in Canada tells us that there are arriving in that country thousands of emigrants from the Slav countries, that these pilgrims are finding difficulties in providing themselves with the religious life to which they are accustomed, and that they are being assisted towards that object by leaders of the Protestant Churches. Without dwelling on the manifold diversities of the situation, we may state as illustrations of what is happening that the Presbyterians (mainly Scottish, of course, in origin) are helping the Uniate Ruthenians of Galicia and that the Methodists are similarly giving help to Latin-worshipping Poles. And this, not with the object of conversion, but simply to develop the religious instinct in accordance with the ideas of their *protégés*. Shades of Calvin, Knox, and Wesley! But is not this a sign of a tendency to centralisation and unity?

ITEMS OF INTEREST

GENERAL.

THE West Riding County Council, acting on the advice of its Education Committee, has decided to reduce its expenditure on education other than elementary during the coming school year. The chairman of the committee, in moving the adoption of the report, pointed out that the chief items of reduction are £1,500 in grants to universities, £850 on secondary schools, and £1,465 on scholarships. The large scheme for the development of secondary education in the West Riding, which is now approaching completion, has entailed heavy expenditure, and has been more costly than was expected. Practically £300,000 has been expended in the erection of new secondary schools, and a considerable sum in enlargements and improvements of existing schools, the annual charge for capital being more than £20,000 a year. It is estimated that when all the schools are built the cost will be £25,500. Financial matters have been rendered more serious by the withdrawal by the Board of Education three or four years ago of the local science and art scholarships. The committee received £5,000 from that source, and the amount would now have reached £10,000. Grants have been made in substitution, but with the stipulation that 25 per cent. of free places should be provided. The position has become so serious that if the present arrangements had been continued their so-called 3*d*. rate would leave the committee with a deficit of £20,000.

THE second triennial report on higher education in Kent contains much information of value to all concerned with secondary education. One of the most interesting para-

graphs deals with the subject of the number of teaching hours of the headmasters and headmistresses in schools aided or maintained by the Kent authority. On visiting an engineering works, we should hardly expect to find the head of the establishment turning at a lathe, say, but it seems to be the peculiar privilege of some headmasters and headmistresses to take ordinary form work for many hours a week. Two unhappy headmasters teach for twenty-six hours a week; one for twenty-five and one for twenty-four; eight teach for twenty hours "or more." Of the remainder, one teaches for fifteen hours, three for about eleven hours, and one for ten hours. Two headmasters are distinguished by only teaching for about seven hours each per week, but, as the report remarks, "the first of these undertakes a good deal of administrative work in connection with the girls' school, and the second is headmaster of a mixed school." Among the headmistresses, we find two who teach for about eighteen hours per week, eight from twelve to fifteen hours, and so on. One headmistress does not teach at all—but we are told that she has been head of her school for twenty-six years. The compiler remarks that excessive teaching impairs the efficiency of the supervision of the head teacher. We would add that it is not economy, but an extravagant waste of the ability of the head teachers who are so overworked. Governing bodies who employ their head teachers as ordinary members of the staff, or allow their valuable time to be used in conducting the correspondence of the school, are certainly not advancing the cause of education thereby.

To raise the total number of girls receiving higher education from 552 to 2,047, *i.e.*, an increase of 1,495 pupils, is surely an achievement of which Kent may be proud, considering this great increase has been brought about in six years. In 1903 the only opportunity for obtaining public higher education for girls in Kent was supplied by two mixed schools and four secondary schools. At the end of the last school year, 1908–9, there were no fewer than ten schools for girls under the Kent Education Committee, in addition to those giving the facilities already provided. The success of some of these new girls' schools has been almost remarkable; for instance, that at Dartford, at present housed in the Technical Institute buildings, but shortly to have a fine building of its own, has had as high an attendance as 160. The fees are placed as low as possible, being £7 1s. per annum for young children, and somewhat higher for the older ones. A suggestion has also been made to keep the fees of those who enter at an early age constant, and in this way to prevent what is rather an undue early leaving age. It is satisfactory to note, too, that while devoting itself so largely to increasing and to improving the girls' schools, the committee has not lost sight of the needs of the boys' schools. The finances of many of these latter have been a cause of anxiety, but by its grants in aid of building funds, and by its annual assistance, the committee has shown itself very desirous to help forward the higher education of Kent children. In one point only does the Education Committee seem lacking. It still follows the lead of counties giving £60 per annum as major scholarship allowances, although recently it has in certain cases increased this amount to £75. Bearing in mind that its own scholars, at least, are usually poor, and that an exhibition at Cambridge or Oxford is usually worth, say, £30 per annum, the total amount which a clever pupil can obtain is not enough for the purpose if, as is usually the case, the school have no leaving scholarships. An increase of the Kent major scholarships from £60 to £100 per annum would solve the problem of many a hard case of a student with ability, but without means to profit by it.

THERE is a growing disposition on the part of education authorities to make arrangements to render it possible for boys leaving elementary schools to obtain some simple technical training before beginning to work seriously at a trade. The Middlesex Education Committee has decided to open this month a preparatory trade school for the boys of Acton and Chiswick. Boys who are thirteen years of age or upwards, who have reached Standard VI. or its equivalent, and are recommended by the headmaster of his school, are eligible for admission. The object of the school is to provide an organised course, to last two years, of preparatory practical instruction for boys desiring to enter the engineering, building, or allied trades, and eventually to become skilled craftsmen. Whilst the instruction is to be thoroughly practical and applicable to the needs of boys intending to become artisans, the scientific principles which underlie the various trades are to be taught carefully. It is hoped that a boy, after he has passed through the school, will be able to enter the workshop of his selected trade with a clear knowledge of what is required of him, and a mind fully equipped to attack with success the practical intricacies of his craft. Endeavours will be made to keep in close touch with the various firms of the district, and to induce employers to give preference to boys who have passed through the school and are recommended as efficient.

THE Education Committee of the London County Council has published a report by Miss Durham, inspector of women's technical classes, on juvenile labour in Germany and how it is being dealt with. Berlin, we learn, is not so spendthrift of young life as is London. The newspaper boy and the child street-trader are unknown. The errand-boy and errand-girl, it is true, are on the increase, but the middle-class housewife still herself goes—or sends her maid-of-all-work—to bring home the daily marketings. Shopkeepers do not, as a rule, call daily for orders or deliver customers' goods daily. Where a van or cart is sent, a van-boy is unusual. If a second person is carried on the van, he is generally a man. The telegraph and messenger services are performed by men (usually ex-soldiers), not by boys. There are three authorities dealing with the question of juvenile labour—the labour exchanges, the Handworkers' Trades Association, and the education authorities. Of these, by far the most important part is played by the local education authorities in co-operation with the Chamber of Trade. The labour exchanges, in so far as they deal with the matter, act as little more than centres of statistical registration.

THE August issue of *School Hygiene* contains an interesting and suggestive article by Mr. Hugh Richardson, of Bootham School, York, in which he discusses with much humour "what schoolmasters in the future might be and do." Some of Mr. Richardson's confessions will appeal to many schoolmasters. "How many things have I not seen and misjudged myself, cheering broken legs and broken arms with false hopes that it would prove only sprained ankle or wrist." "Diagnosis," he continues, "is properly the work of the doctor. Still, all sorts of queer things come to us in the first instance. When Brown went down below the desk in algebra lesson, and began kicking about, it was probably a fit, though by the time we carried him senseless to the housekeeping department it was called a faint. Green has been known to play the fool, but when he suddenly shrieked and dropped on the

laboratory floor, there was nitric acid in his eye. White bore a particularly steady character, yet one Saturday morning he suddenly began throwing his books about in school. In his case the course of discipline was interrupted by his unexpected removal to the sick-room. Years afterwards I found the answer near the end of Clouston in the chapter on 'Rare Causes of Insanity,' paragraph 'Scarlatina at its Onset.'"

DURING the months of August and September the Board of Education will exhibit at its offices in Charles Street, Whitehall, a collection of modern language text-books. This collection has been formed by a committee of the Modern Language Association, who are alone responsible for the selection of the books. The aim of the association has been to make the collection as representative as possible of the various methods now advocated for the teaching of modern languages; books which are generally accepted as obsolete have been excluded. The Board of Education feels that this collection will be of interest and value to many teachers who are not members of the Modern Language Association, and it is hoped that they will take advantage of this opportunity of familiarising themselves with the contents of this collection. A collection of about 500 text-books in use in French elementary and secondary schools will also be displayed. The collection will be on view on week-days between the hours of 10 a.m. and 5 p.m. (Saturdays until 2 p.m.).

WE have received from the Director of Public Instruction in Colombo a copy of the "Proceedings of the Conference on Science Teaching" which was held in March last at the Ceylon Technical College. About fifty persons attended the conference, and showed so much interest in the proceedings that it is to be hoped that the function may become an annual one. Nothing but good can come from a serious discussion of the problems and difficulties which confront a teacher trying to adopt modern methods in his teaching. It is only by such discussion that the less experienced teacher feels that there *are* any problems, and it is a good thing for him to have developed a feeling of discontent with his own methods and curiosity about those of other people. Among the subjects introduced at the two meetings were "skipping" in the teaching of practical mathematics, the revision of the school chemistry course, object-lessons as an introduction to elementary science, and the relative merits of courses in measurement and in the general phenomena of physics.

PROF. CHATTERTON continues his article on the Indian industrial problem in the current number of *Science Progress*; he points out that what India greatly needs is the assistance of industrial experts, who will find every opportunity for the display of mechanical ingenuity in meeting the requirements of the native population. Particular attention is directed to the great loss suffered by India so long as the best of her sons devote their energies and abilities almost solely to the legal profession and to Government service, and thus do not contribute directly to the material welfare of the community. Great stress is laid on this wastage of material and on the necessity of properly training the men who can usefully be diverted from literary pursuits to take an active part in the improvement and establishment of native industries.

IT is proposed by the *Times* to issue monthly supplements dealing with South America. They should be useful to the teacher of geography. The first, issued on July 30th, contains two valuable tables, the first on the imports and exports of Argentina, showing the values in 1908 and the percentages which went to or came from each country respectively; the second shows the exports of nitrate from Chile to the separate ports of the continent of Europe and of the United Kingdom.

SCOTTISH.

THE report of the departmental committee on the financial position of the Scottish universities has just been issued. Nearly a year has elapsed since the committee began its labours, but in view of the thoroughness with which it has gone into the whole question, the time has been well spent. The report is a lengthy one, and deals in detail with the requirements and financial necessities of each university. The main conclusions, so far as they affect the universities in common, are as follows: (1) That a yearly sum of £40,000, in addition to existing grants, be allocated between the four universities on the following basis—£12,500 to Edinburgh, £12,500 to Glasgow, £9,000 to Aberdeen, and £6,000 to St. Andrews. (2) That these grants be given subject to the undernoted conditions: (*a*) that each university submit a scheme showing how the additional grants are to be expended; (*b*) that a yearly return be made by each institution showing its whole income and expenditure, and prepared in a form to be prescribed by the Treasury. The report directs attention to the increasing demand for specialised study, and suggests that a definite proportion, possibly a quarter of the additional grants, should be "ear-marked" for this purpose and for the equipment of laboratories.

IT is satisfactory to find that the Treasury has lost no time in acting upon these recommendations of Lord Elgin's committee. The Chancellor of the Exchequer has issued a Parliamentary paper allocating a sum of £21,000 to the universities for the current year. This amount is divided between the universities on the basis suggested by the Elgin Committee, viz., £6,250 to Edinburgh University, £6,250 to Glasgow, £4,500 to Aberdeen, and £4,000 to St. Andrews. With these grants and the promise of the full amount suggested by the departmental committee next year, Scottish universities should enter upon a greatly increased sphere of usefulness.

THE report of the Committee of Council on Education in Scotland for the year 1909–10 has now been issued, and is even more interesting than usual, as it is the first since the passing of the Education Act, 1908. The report notes that this Act marks an important epoch in the development of Scottish education, inasmuch as while it consolidates and regularises former advances, it "provides a basis for further development in response to the new or newly appreciated needs of the times." One of the most remarkable features brought out in the report is the extraordinary growth of higher grade schools. In 1900 there were only twenty-seven schools of this class, with an average attendance of 2,561. In 1909 the number of schools had increased to 187 and the average attendance to 22,118, of whom 4,927 were third-year pupils. There would seem to be a very heavy "educational mortality" between the first and third year. Of the 1,606 who began the first year in 1900, 606, or 37·7, reached the third year, while of the 8,734 who began in 1906, 4,927, or 56·7, reached the third year. This is a decided advance, but the "wastage" is still heavy.

THE discussion in the House of Commons on the Scottish education vote was made the occasion for an attack in force upon the Scottish office. The allocation of the

balance of the Education Fund has been a cause of discussion among education authorities and Members of Parliament ever since the passing of the Education Act of 1908. The districts which have fared well in the division of the spoils are naturally pleased with the present position, but the districts which have fared ill are bitterly hostile to the Department's principle of allotment, and maintain that it is in direct violation of the instructions in the Act. Several conferences have been held to arrive at an allocation by common consent, but to no purpose. Meanwhile advantage was taken of the Scottish vote to air the grievances of the "disinherited." Sir Henry Craik was probably right when he said that he would defy the Angel Gabriel himself to make an allocation that would satisfy everyone. The Lord Advocate unfortunately based his defence of the existing scheme on the ground that it pleased a majority of authorities, but Major Pirie had him on the hip when he retorted that the true test of a scheme was not whether it pleased or did not please a majority, but whether it was just. The Government, of course, bore down the opposition, but the last has not been heard of the matter.

THE inaugural meeting of the Edinburgh University vacation courses in English, French, and German took place in the old university hall, when the Lord Provost, on behalf of the Municipality, offered a welcome to the visiting students. Prof. J. H. Millar, who gave the opening address, took as his subject "A Century of Progress," viz., from 1730 to 1830. This period he considered the high-water mark of Scottish literature, including as it did the great names of Hume, Robertson, Scott, and Burns, all of whom, though Burns in a lesser degree, had a close association with Edinburgh. The secretary's report showed that the numbers in attendance included 100 students from France and 50 from Germany.

IN answer to a question in the House of Commons, the Lord Advocate stated that the Education Department proposed to extend to Scottish education authorities the same terms that had been granted to those in England with regard to loans for school buildings. This means that the maximum period for the repayment of loans will be fifty years instead of forty as at present.

IRISH.

THE report of the Intermediate Board of Education for Ireland for 1909 has been presented to Parliament. Following the usual lines, it gives tables in connection with the examinations to show the number of students examined with the results as a whole and in the various subjects, and it also gives the accounts of the Board for the year. There are two innovations. The first is a brief statement with regard to inspection. During the year 1908–9, from over 400 applicants the Board appointed six inspectors, but as the year "was too far advanced to render an immediate beginning of inspection advisable or even possible, the inspectors did not enter on their work until after the usual summer holidays. In the meantime, they were afforded opportunities of becoming acquainted with systems of secondary education in England and on the Continent. As there has not yet been a complete inspection of intermediate schools, we are not in a position to furnish an account of results such as will be possible in future years."

IN the second place, in giving the list of schools receiving grants from the Board, the report states not only the amount received by each school, but also the number of pupils on the school roll, the number that entered their names for the examinations, the number that presented themselves, and the number that passed. The information is useful for those who understand it. The number of pupils on the school rolls does not denote the total number of pupils in the schools, but only those over thirteen years of age. The figures are therefore no clue to the actual number of pupils in the different schools, and in presenting its report to the public, the Board should state what is meant by pupils on the school roll. The number on the school roll is that of pupils eligible for the intermediate examinations, and from the information given in the report it appears that in boys' schools there were 10,600 pupils on the roll, 7,234 presented for examination, and 4,044 passed; in girls' schools, 5,288 on the roll, 3,160 presented, and 1,746 passed; and in mixed schools, 923 on the roll, 564 presented, and 343 passed; making a grand total of 16,811 pupils on the roll, 10,958 entered, and 6,133 passed. (N.B.—A few schools which had not received their grants before the close of the financial year are omitted from the report.) In other words, the Intermediate Board only pays grants on three out of every eight eligible pupils, as grants are only paid on pupils who pass the examinations. This is another condemnation of the examination system of grants.

THE report gives a number of interesting figures with regard to the examinations and their results. The following are merely a *résumé* of some of the most important:

Number of	Boys	Girls	Total
Students giving notice of intention to present themselves for examination	8,350	4,101	12,451
Students presenting themselves	7,676	3,656	11,332
Students passing	4,260	2,011	6,271
Percentage of students passing	55·5	55	55·3
Percentage Preparatory Grade	57·9	58·9	58·2
Percentage Junior Grade	53·2	52·6	53
Percentage Middle Grade	52·6	49·9	51·7
Percentage Senior Grade	68·3	69·7	68·8
Number of Exhibitions	192	90	282
Number of Prizes (Rule 42)	479	101	580
Number of Prizes for Composition	122	66	188

TURNING to the income and expenditure of the Board, we find that the share of the local taxation duties for the year 1908–9 was only £46,566, the interest on the original fund £33,359, and the total income £88,993, which included £4,500 cash proceeds from securities sold in order to maintain the school grant at its former level. The chief heads of expenditure were: administration, £6,522; inspection, £2,996; examinations, £16,239; exhibitions and prizes, £7,133; school grant, £49,635; and bonuses to schools for choirs and orchestras, £3,122.

WITH regard to the local taxation duties, usually known as the Whisky Tax, Mr. Lloyd George made a statement in Parliament towards the end of the last session (see THE SCHOOL WORLD, vol. xii., p. 308). The amounts received by the Intermediate Board under this head were: in 1900, £71,400; in 1908, £49,504; in 1909, £46,566. The amount had therefore decreased since 1900 by £24,834. It was proposed, said the Chancellor, as a temporary measure—*i.e.*, for the present year, 1910—to allot to local authorities under the head of "whisky money" an amount equal to that received by them in 1908, instead of allocating to them half the land value duties the yield of which for the first year might be uncertain, owing to the late date at which

the Finance Act came into force. This statement will be received with satisfaction by education authorities in Ireland; but at the same time it is to be hoped that this "temporary measure" will be followed by a permanent and lasting arrangement, based upon a consideration of the needs of Irish intermediate education.

THE new universities are appealing for funds. At the first conferring of degrees in the Queen's University, Belfast, the Chancellor, the Earl of Shaftesbury, asked for more scholarships to be endowed from private sources and for money to build a large university hall for all large functions appertaining to a university, and, further, to buy an athletic field round or adjacent to which there should be halls of residence for students. The University College, Galway, has appealed by a deputation to the Chancellor of the Exchequer, pointing out that it has been poorly treated as compared with the other university colleges, and that it is seriously cramped in its work. Mr. Lloyd George held out no hope of any increase unless the county councils first made some contribution.

WELSH.

THE difficulties of teachers in the intermediate schools just at present are very great. Yet we trust that every school has not to contend with such criticism as that offered to one of them by the chairman of the local governors, who is an ex-headmaster of a well-known school. This chairman declared that he believed in payment by results, and as for two assistant teachers in the school who applied for an increase in salary, they had done nothing, he believed, to set the Thames on fire. There was no ambition for classical scholarship at the school; and what marketable value had Latin by itself? The English in the intermediate schools was deplorable, and as to Welsh, the children knew as much as they wanted to know. Too much was made of French. More time should be given to English, and a smaller number of subjects should be attempted. Welsh teachers will soon begin to wish to be saved from such friends as their governors!

THE Royal Commissioners appointed to make an inventory of the ancient monuments of Wales and Monmouthshire have issued their first report, and, following the fashion of the day, have made their depreciatory criticism on the teachers of Wales. "Regarding the headmasters and teachers as one of the most progressively intellectual classes of the community, and being deeply impressed by the depth and extent of their influence," the Commissioners say that they "determined on soliciting the assistance of all the head teachers of elementary and secondary schools in the preparation of lists of antiquities of their respective districts. So far as these have yet been distributed, they are bound to admit a feeling of some disappointment at the comparatively unsatisfactory result of their first appeal. Out of 135 headmasters and headmistresses within the county of Montgomery who have been addressed, only thirty-five have given any measure of reply, and of these the great majority have not cared to supply the kind of information that called for little trouble to collect, but would have been of much assistance to the Commissioners." After seeing the public pillory to which the teachers of Montgomeryshire are brought, we wonder whether the fear of worse records will bring their colleagues in other counties into better acquiescence.

THE Merthyr Education Authority has referred to the Local Government Board the question of the provision of spectacles for children attending school, whose sight is defective. The reply suggests that if the parents of such children apply to the Guardians for medical or surgical aid, and this is found to be necessary, and the parents are destitute of the means of providing such aid out of their own resources, the Guardians are empowered to grant such help as outdoor relief, as coming under the section dealing with sickness, accident, or bodily or mental infirmity of the parent or any of his family. If the Guardians think fit, the relief in these cases may be given by way of loan.

THERE seems to be trouble before the Eisteddfod and the Bards of Wales. Criticism has been brought to bear on the selection of subjects, and on the recent adjudications in the Colwyn Bay meeting, especially in the department of poetry. It is stated that there are two schools of poetry in Wales, the old and the new. The old school is alleged to be given to theology and un-lyrical subjects, and some of the adjudicators are regarded as not really poetical in accordance with newer demands. Again, it is said that "the educated poets of Wales are simply turning their backs on the National Eisteddfod, that the Welsh living poets, who would rank as poets when compared with other national poets, have ceased to be connected with the Eisteddfod," and so on. These attacks must provoke a good deal of criticism, and the questions of new standards due to the higher education of the country in a national and popular institution is of general psychological importance.

THE joint committee of the Flintshire Education Committee and of the County Council have passed a resolution by eight votes to seven, requiring the two offices of county secretary of education and of director of education to be amalgamated as soon as possible. There is apparently no requirement that the new office should be held only by a man who has had good school-teaching practice, and should thus know the working of schools "from within."

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

First Principles of French Pronunciation. By E. Saillens and E. R. Holme. 108 pp. (Blackie.) 2*s.* 6*d.* net.—The increased interest in phonetics is a welcome sign of the times. The latest book on French pronunciation is written by pupils of M. Passy and Prof. Viëtor; this is sufficient guarantee that it is sound and sensible. Prof. Anderson Stuart has written an introductory chapter on the organs of speech, which is rather heavy in style and occasionally too technical for the beginner; some good diagrams, however, serve to make the text intelligible. The authors give an account of the transcription of the International Phonetic Association; their reason for not retaining ɸ and œ is not convincing; and the signs they substitute are in a smaller fount than the rest of the alphabet, and consequently look too much alike. The account of the French sounds shows considerable study of the subject; but the authors do not appear to have an equally good knowledge of English sounds. Indeed, the needs of the English learner are less fully understood than is the case in Mr. Dumville's excellent book on the same subject. The uncertainty in the representation of English sounds must be confusing to the beginner; thus the vowel sounds of *no* are represented variously as o:, ou, o:u, ow and oəu. Other odd transcriptions are le:bə (labour) and ɛmpa:ɪə (empire). The statements made about French sounds are generally correct. We do not, however, know why it is said that *e mouillé* is

now commonly pronounced (in Northern France) as [l+j]. The transcription of French words, in the examples of single words and in the connected passages in the appendix, is usually correct; but a fair number of misprints occur. The designation of the length of vowels is especially irregular. Some of the excursions into historical French are unfortunate: thus it is said that the *d* of *grand'mère* has been allowed to disappear—but it was never pronounced; that final *l* in old French, being very different in pronunciation from the ordinary *l*, came to be spelt in a very different way—an awkward way of stating that a vowel was evolved and the *l* dropped; or that in, *e.g.*, *a-t-il* the *t* "has remained unharmed"—the *t* here has no connection with the *t* of *habet*. The bibliography forming Appendix B leaves out of account some recent books that are valuable to the beginner.

Buddenbrook, ein Schultag eines Realunterseckundaners. Edited by J. E. Mallin. vii+142 pp. (Bell.) 2*s.* 6*d.*—It was a happy thought to edit for school use this extract from Thomas Mann's deservedly popular novel, "Buddenbrooks." Mr. Mallin divides it into sections, to which he adds footnotes and reform exercises which show his skill as a teacher. He also supplies passages for retranslation, and a vocabulary from which "very common words and words whose meanings can be readily explained and understood without recourse to English have been excluded." The principle on which *anfangen, brauchen, doch, frieren, glänzen, heissen* are included, and *Hingebung, dickfellig, entzünden, plötzlich, Betrug, dumpf* are omitted, is not obvious. The book is not free from misprints—*e.g.*, *dürsen* (p. 5), *Crgänzen* (p. 24), *Tur* (p. 32), *Falschungsmittel* (p. 120), and the old-fashioned spellings *zu einander, u.s.w., Alle, paar Mal.*

Till Eulenspiegels Lustige Streiche. Edited by F. Beit. vi+92 pp. (Heath.) 1*s.* 3*d.*—The merry jests of Tyll Owlglass have not yet lost all their power to amuse an unsophisticated audience, and they may well serve to enliven the German lesson, especially with the pictures supplied by Georg Barlösius. The editor has supplied a *questionnaire* on the first thirty-two pages, and sentences for retranslation based on the remaining eighteen pages—a rather odd arrangement. The notes are brief but sufficient, and there is a vocabulary, which is practically complete.

Classics.

The Unity of the Latin Subjunctive. A Quest. By E. A. Sonnenschein. 60 pp. (Murray.) 2*s.* net.—Prof. Sonnenschein has made an interesting study of the subjunctive, which is valuable for two reasons. In the first place, he collects a number of similar examples of certain constructions, far more than could be given in a grammar book, and thus shows how common they are. In the second, he has offered some instructive suggestions as to the original meaning of the word and its meaning in Latin. He sees no difficulty, for instance, in supposing that the subjunctive and optative had once the same meaning, which was split up amongst the various forms as the speaker's conciseness grew clearer. For the rest, his collections have the effect rather of intensifying the meaning of the mood. It is rather determined futurity than vague futurity that he sees in it; and he gets a very good English equivalent in *shall* or *should*. This is especially common with the indefinite second person singular, but not only found with that. Thus *feras non culpes quod mutari non potest*, "What can't be cured must be endured"; but also *iniuriam facilius facias quam feras*, "You shall find it easier to do than to bear"; and *quippe qui frater siet*, "Why surely he must be my brother!" In the light of these and others he suggests that the original meaning of the subjunctive is obligation, from which it is possible to derive both the subjunctive of command and that of natural or ethical obligation. To the same idea he refers the solution of volition, after analysing the uses from a psychological point of view. He cannot distinguish the subjunctive from the future indicative; for it is used to express a resolve or promise (*cena detur*, "You shall have a dinner"). The Homeric student will remember precisely the same thing in Homer, where, indeed, the forms are often the same; and so is the form of *iam* both future and subjunctive in Latin. On this theory, also, the interrogative subjunctive at once falls into place; nor is it difficult to classify so-called potential, prospective, final, and consecutive. Finally, he suggests the term injunctive, as better than subjunctive, which has long been regarded as unsatisfactory, but keeps its ground by tradition. We recommend to scholars this clear and suggestive essay. Rarely do we find in grammarians so much common sense allied to so much learning.

Second Latin Book: being the Second Year of a Two Years' Course Preparatory to Caesar. By C. A. Williams. xvi+360 pp. (Rivingtons.) 2*s.* 6*d.*—The plan of this book is open to criticism in several parts. First, in spite of common practice, Caesar is not well suited for an early place in the Latin course: he is admirable when the B.G. can be read through in a term, but dull in bits, and not attractive to the beginner. The goal of the book also makes it necessary to use chiefly a military vocabulary, and this sacrifices the interest of bringing Latin into touch with a boy's own feelings and interests. Secondly, the passive is only begun in the second year, and we hold strongly that a skeleton of the whole grammar (not all the details, of course) should come in the first year. Thirdly, the vowels long by nature ought all to be marked, and no others; if this be done, short vowels never need be marked. Such a marking as *rĕspicio* is incorrect, and no vowel is ever "made long by position" except (as Cicero tells us) before *ns, nf*, and perhaps *gn*. *ābicio* (p. xvi) is only used by Juvenal; classical poets have *ăbicio*. *dĕ-est* (p. 12) is also wrong; *deest* has only one syllable. But the book has many merits. Chief is that it insists on oral work all through, quoting with approval the recommendation of the Scotch Board of Education to that effect. So also is the practice in reading without translation, and question and answer in Latin, for which see the remarks on p. 251. But exercises like that on p. 12 are both difficult and dull: "mittunt— (*pres. pass.*) ad Caesar— confestim ab Cicerone litter—," and so forth, to be filled in. And when the boy is told to "make sentences orally with the pres. tense of the verb *colloquor*," and so forth, he is reduced to dumbness: no thoughts naturally present themselves in this way. Let the master use *colloquor* himself, and get an answer. We are reminded of Miss Havisham telling poor little Pip to "play, boy, play." We regard this book as a sign of the times. It takes a step in the right direction, but in its present state halts between two opinions.

Cicero, Pro Roscio Amerino. Edited by J. F. Stout. 132 pp. (Clive.) 2*s.* 6*d.*—It cannot be said that a new edition of Roscius was wanted; and the present offers the same faults we have so often mentioned without effect. We take a few notes: "*iis*, possessive dative, almost equivalent to *eorum*; *auderet*, consecutive subjunctive; *cui*, dative of indirect object," and so forth. In xxii. 1, *surrexi ego, ego* is not emphatic, as the editor

says; it is merely the new subject, mentioned by regular rule. A number of the notes are really good; but these are mixed up with numerous translations and explanations of trivial points of grammar, so that the book is not suitable for school use. It leaves almost nothing to the teacher and nothing to the intelligence. There is an index of names and a full historical introduction, which includes analysis of the epoch and a section on Roman criminal jurisdiction.

T. Lucreti Cari De Rerum Natura: a Selection from the Fifth Book (1–782). Edited, with Introduction, Analysis, and Notes, by W. D. Lowe. Ditto, 783–1457. By the same. 90+67 pp. In one volume. (Clarendon Press.) 2*s*.—The English analysis, very full, is a fault in this book: what is the value of classical study if the reader is not expected to make out the subject-matter of his texts? The notes, as usual, contain a great deal of elementary stuff: *e.g.*, deliberative question, consecutive subjunctive, indirect question, notice the alliteration (*bis*), all on one page! A selection from this book, text only with a very few notes on those parts of the philosophy which would be outside the boy's proper knowledge, would be welcome.

The Trinummus of Plautus. With Introduction and Notes by H. R. Fairclough. xxxvi+118 pp. (New York: The Macmillan Company.) 3*s*. 6*d*.—The introduction to this book contains a short account of the author and his works, with a good section on the "Meter": we are puzzled, however, by a four-syllable foot in the trochaic line (p. xxvi). The notes are satisfactory, although they contain too much that is elementary (as *admisit in se*, "committed," 44; *proinde ut*, "just as," 65; *malis*, "cheeks," 475). The few allusions to philology are correct; we might ask for more sometimes, as in the case of *hoc=huc*, 66. *Totidem litteris* (345) surely means that the two words have the same number of letters, not "by every letter of the word." Nor is *credidero* used for the future because of the "energetic tone" of conversation: it has that force because the perfect stem did not imply past time. So the pluperfect often is used for the preterite, and not only by Plautus, but by Virgil, Propertius, Tibullus, and others.

A Junior History of Rome to the Death of Caesar. By M. A. Hamilton. With a preface by L. H. Helbert. viii+294 pp.; illustrations and maps. (Clarendon Press.) 4*s*. 6*d*.—It is difficult to give an opinion as to the working value of a history without trying it. We are inclined to think that only two kinds of histories are suitable to schools: stories for the young and source-books for the older boys. But if a text-book is to be used—and they generally are used—this seems to us more likely to be useful than any other we have seen. It is well written, simply and clearly (with a few lapses, like that on p. 2, lines 21–3, where metals seem to have been hidden in the earth by wanderers); it is accurate (but the Oscans are implied not to be an Indo-Germanic race); and it does not worry the learner with too much constitution. Mr. Helbert's recommendation ought to carry weight. We think this is a good book.

Ovid, Metamorphoses III. Edited by M. Cartwright. 110 pp. (Clarendon Press.) 2*s*.—This volume contains a good account of Ovid's merits and faults, his power of narration and his technical skill being specially insisted on: another section deals with the influence of rhetoric on Roman poetry, with special reference to Ovid and his successors. The notes are unpretending, but, as usual, they would be the better for many omissions. Such notes as "ablative of description," "ablative of cause," "*qui color*=is color qui," are far too frequent: they are out of place in any school book. The English summaries are also bad for the learner. If Miss Cartwright gave more notes like that on p. 98, which compares a passage of English poetry, and of others only what is really needed, she would do a good service. There is a vocabulary.

An Introduction to the History of Rome. By H. N. Asman. xii+220 pp. (Methuen.) 2*s*. 6*d*.—This is a book of a modern type; as the author describes it, something between the story-book and the larger history. It is lighter reading than most histories, that is, it contains fewer facts; but it gives a continuous story of the growth of Rome. The reader will not have to unlearn it when he gets on to serious work; and we think it will be useful for middle forms in schools. There are fourteen pictures, several of them excellent, and two maps.

English.

A New Shakespearean Dictionary. By R. J. Cunliffe. xii+342 pp. (Blackie.) 9*s*. net.—Mr. Cunliffe has been well advised in putting into so concise and convenient a form what is at present to be found either less skilfully arranged in larger and older works or scattered in more or less inaccessible volumes. Especially he has been able to make use of the New English Dictionary, and to focus the wonderful Shakespearean scholarship that lies scattered throughout its pages. Now that the annotated text is largely discredited in schools, we can imagine no better training in exact English scholarship—the continual challenge of our classical friends—than the use by higher forms, reading Shakespeare, of Mr. Cunliffe's work. We do not mean to give the impression that the dictionary is primarily or even secondarily concerned with the historical study of the language; as a matter of fact, the author expressly repudiates any such estimate of his work, and lays claims merely to a presentation of materials for the accurate exegesis of a particular text; but simply as an aid to the study of vocabulary it will make definitely for scholarship. It will be an obvious and easy matter to supplement it by a grammar such as Abbot's and a commentary such as Dowden's. We have tested it in a large number of instances, and have found it wonderfully complete.

The Elements of English Versification. By J. W. Bright and R. D. Miller. xii+166 pp. (Ginn.) 4*s*.—This book makes no pretence to be a history of English prosody, nor does it discuss the æsthetic functions of the forms of verse; it is concerned solely with a plain, almost tabular, description of the technique of verse form; and even so it does not cater for the advanced student. The scope of the book being thus understood, we may say at once that the treatment is clear and interesting. A few introductory definitions on rhythm, melody, harmony, and metre lead up to an enumeration of the conventional forms, with well-chosen illustrations from old and modern poets. Necessarily, a chapter is devoted to the *quality* of sounds as an element in the melody of the verse, before attention is paid to the measurement or *quantity* of the various metres. The second part of the book is concerned with the grouping of verses into couplet, stanza, &c., and the last chapter treats of complete poems of definite structure—

the sonnet and the ode in their several varieties, and the early French forms. The technique of versification has, we fear, been rather neglected in English schools, and could, we are sure, with advantage have more attention paid to it—not that we do not fully recognise that, taught unimaginatively, no subject could be more barren; but armed with this book and a little imagination, no teacher of English literature need for the future shirk so essential a part of his work.

Stories from the Faerie Queene. 234 pp. (Harrap.) 1s. 6d.—These stories, retold by Mr. Dawson and illustrated by Miss G. Hammond, belong to the series "Told Through the Ages." There is nothing but praise for this beautiful volume. The skill and reticence of the text and the beauty of the shape and fount make the series ideal. Perhaps the picture of the Wanton Lady might have given place to another: no book supplies so many chances to the artist. Probably the series needs no praise in a review: it should be in all school libraries. The very remarkable pictorial illusion in the frontispiece has escaped notice: it is ludicrous.

Ten Great and Good Men. Lectures by Dr. H. M. Butler. 313 pp. (E. Arnold.) 6s.—The simple preface of Dr. Butler, claiming no originality for this simple book, tells us that the ordinary reader has been kept in view. The names of the men to whom this rather catchy title has been given are Burke, Pitt, Canning, Wesley, Wilberforce, Lord Shaftesbury, Bright, Gordon, Arnold, and Thomas Erskine, all, except perhaps the last, known in a semi-intimate way by everybody. A very brief bibliography is attached to each lecture: the gentle spirit of the Master of Trinity breathes through all the pages.

The Professor at the Breakfast Table. By Oliver Wendell Holmes; with an introduction by Clement Shorter. xii+371 pp. *The Ingoldsby Legends.* By Richard Harris Barham; with an introduction by Henry Newbolt. xiii+304 pp. (Blackie.) 2s. 6d. net each.—These recent additions to the Red Letter Library will serve to enhance the high reputation of this daintily artistic series. We have on previous occasions advised teachers to make the acquaintance of these beautiful pocket editions; when they do, they will look forward eagerly to each new volume.

History.

Historical Tales from Shakespeare. By Sir A. T. Quiller-Couch. 301 pp. (Edward Arnold.) 1s. 6d.—The publication of this book raises questions in our minds. Is Shakespeare difficult for children to read? If so, should they have an introduction to him such as this book attempts to provide? Or, should they read him, apprehending him within their measure, leaving the comprehension, however incomplete, to later years. Are the English historical plays really Shakespeare's? and, even if they were, are they, apart from certain speeches, worth reading by our children? Sir Arthur himself has shrunk from Shakespeare's presentation of Joan of Arc, substituting a beautiful appreciation of the Maid's character and work. And, if the plays are not worth reading by children, is the story of them, told however well (and Sir Arthur has told the story well, in spite of what we think are certain peculiarities of phrase), worth their reading in addition to what they must learn in the ordinary course of their lessons? We are thinking more especially of those plays which were based on the English chronicles, and the subject of which may, speaking broadly, be described as the origin and progress of the Wars of the Roses. Their period extends from the last years of Richard II. to the battle of Bosworth, and there is perhaps no other period in our history which could better be spared from our text-books. The heroes are men of the Renaissance, with all its brilliance and its want of morality, its cruel treacheries and brutal callousness. Told even by Sir Arthur, the story is often tedious, and the multiplicity of characters, each person pursuing a purely selfish policy, becomes quite bewildering. These are thoughts which arise in our own minds as we peruse this book, and we would recommend our readers to think out their problems for themselves as they sample its pages. Besides the plays we have indicated, the stories of others are told—Coriolanus, Julius Caesar, and King John, but not, as we might have expected, Henry VIII. There are illustrations, consisting of reproductions of pictures in the Boydell collection, but we think some better choice than these might have been made. They are too early-Victorian for modern taste.

Edward the Fourth. By L. Shalford. xvii+340 pp. (Pitman.) 3s. 6d. net.—The author in his preface, and the editor of the series ("Makers of National History") of which this book is one, speak of the neglect which Edward IV. has suffered at the hands of historians. Mr. Shalford attributes it to the dearth of good contemporary chroniclers; but now that other sources are open to investigation, and the results of research into them have been published, it would seem possible and desirable to devote a book to the man whom J. R. Green regarded as the founder of the "new monarchy." Therefore we have now a careful and, so far as materials available go, complete story of the life of Edward IV. It is not a savoury story, and, while Mr. Shalford makes it as interesting as that period can be, it will not rouse any enthusiasm. But it is good to have the period thus satisfactorily and concisely treated, and teachers will find this book useful to consult on details. There is an index. We should like to ask the author on what day it really was (pp. 54–5) that Edward was crowned.

A Short History of Southampton. By F. J. C. Hearnshaw. 256 pp. (Clarendon Press.) 2s. net.—Dr. Hearnshaw is professor of history in the Hartley University College at Southampton, and has devoted much of his energy to research in the history of that town. One result of that work is this excellent little book, in which he reviews the history of the country at large as mirrored in the story of the southern seaport. "Space fails" him "to tell of the . . . local events of Queen Victoria's reign"; and the Southampton of which Dr. Hearnshaw tells the story has all but vanished or is swallowed up in the busy streets and docks of the present day; but it is an interesting story, not only to Southampton folk, but to all. The book consists, as the title-page tells us, not merely of Dr. Hearnshaw's sketch, but of eleven short essays by members of the Southampton Historical Association and others, on some aspects of town life, in which the reader will find much antiquarian and other lore. The whole book is illustrated with good pictures and plans, and has a very full index.

European History Chronologically Arranged, 476–1910. By A. Hassall. ix+419 pp. (Macmillan.) 8s. 6d. net.—This is a list of the events of mediæval and modern European history, arranged in columns under the headings of the various countries. A glance at some of the pages

shows that the distribution is not always correct or clear, especially in the earlier periods; but the teacher will doubtless find this a convenient reference book, though the lack of an index will sorely hamper him in searching for the date of any event he may desire. Beside the list of events there are "summaries" of some series of events, some genealogies, and lists of sovereigns, in which we are surprised to find Meroving kings and Caroling kings under the heading of France, and other instances of curious terminology.

Kings and Queens of France. By M. Carnegy. viii + 318 pp. (Mills and Boon.) 3*s.* 6*d.*—Though the author calls her book a "concise history of France," the title indicates better its subject. But a writer who says that "Charlemagne made his headquarters at Aix-la-Chapelle, a town on the borders of France and Germany," who calls all French persons by their French names or titles, but all others by the English equivalents for their own, who speaks of Maria Theresia's father, Charles VI., as "Emperor of Austria," and who has nothing to say about French history after 1870–1, except to describe the life of the ex-Empress Eugénie, can scarcely be regarded as a serious teacher of history. Within its own limits, the book is good enough. There is one map (of modern France) and four photographic illustrations.

Elements of United States History. By E. Channing. xiv + 349 + lx pp. (New York: The Macmillan Company.) 5*s.*—Prof. Channing's name is well known as a writer of books on the history of the United States of America, and this book is well worthy of his reputation. On the title-page and in the preface he acknowledges his indebtedness to the help of Miss Susan J. Ginn, and the result of their work is a thorough but brief account of the constitutional and international struggles of the American Republic. Maps, pictorial illustrations, analyses, &c., abound, and there is an index. The student of the English language will be interested to note how many expressions which we have until now regarded as American slang are adopted into this book, which, intended for schools, will stamp them as henceforth literary and even classical.

Heroes of Indian History. By J. C. Allen. viii + 152 pp. (Longmans.) 12 annas.—Mr. Allen writes as a native of India. He begins by asking "Where is the land *we* live in?" and goes on to tell of his "heroes" as if the story of India were all of a piece, whether it be ruled by Asiatics or Europeans. This is excellent; and we think it will be good for English children to read this little book as well as the natives of India, for whom it is primarily intended. The names are strange to us, and we could have wished for an index, but the stories are well told; there are several maps and an abundance of good illustrations.

England since the Revolution (1688–1901). By C. S. Fearenside. xvi + 306 pp. (Clive.) 2*s.* 6*d.*—A reprint of part of the "Matriculation Modern History," by the same publisher and author.

Mathematics.

Public School Arithmetic. By W. M. Baker and A. A. Bourne. xii + 386 + 1 pp. (Answers.) (Bell.) 4*s.* 6*d.*—This is a thoroughly practical book. The authors write with great experience of the directions in which the ordinary schoolboy tends to go astray, and so they give frequently repeated precepts and injunctions designed to keep him in the right path. Such advice as "Show up all working, including the check," "Avoid side sums," "Give explanations of the steps," "Form a rough estimate of the answer before doing the work," ought to be written on every blackboard during the arithmetic lesson. The examples are very numerous and have been carefully graduated; some sets are intended for oral work. A certain amount of algebra is introduced and applied to simple graphical problems. Other examples introduce geometry, and a few require actual measurements to be made by the pupils. We think further suggestions for work of this character would be of value, as there is nothing which teaches so well the actual meaning of approximation or convicts so forcibly of errors in calculation. The use of logarithms is explained in the penultimate chapter.

A School Algebra. Part I. By H. S. Hall. xii + 300 + xxxvii pp. (Answers.) (Macmillan.) 2*s.* 6*d.*—This is not a mere revision of the well-known "Elementary Algebra" by the author and the late Dr. Knight, but an entirely new work, in which the author has been at liberty to present the subject in the form and sequence which his ripe experience has led him to consider to be the most suitable. This first part contains, in addition to the elements of the subject, regarded as a generalised arithmetic, an exposition of methods of factorisation, of the solution of equations up to simultaneous equations of the second and higher degrees, and of the principles of graphs. The easier cases of each division of the subject are considered in the earlier chapters, more difficult matters being treated in the later ones. We would commend especially the worked examples in the text, which are models of the manner in which the work should be exhibited. We are glad to see that learners are not only told what they ought to do, but also warned against doing what they ought not; attention to these hints should do much to eliminate faults with which examiners are too familiar. Another excellent feature is the insistence upon reference to fundamental axioms in the process of solving equations. The book is in every respect worthy of the high reputation of the author.

Descriptive Geometry. By G. C. Anthony and G. F. Ashley. x + 130 pp. + 34 plates. (Heath.) 6*s.*—A very attractive treatise on this subject, the type and diagrams being alike excellent, while the problems are treated in a manner which renders the work suitable for use, not only by engineers and architects, but also by students of science and mathematics. A course of such work would be of great assistance to the latter when beginning solid geometry. An introductory chapter on definitions and first principles is followed by a long one on the point, line and plane. In dealing with each problem the authors give first a concise statement of the geometrical principles involved in its solution, then an outline of the method to be adopted, followed by a detailed construction. The third chapter discusses the general characteristics of surfaces, and in the remaining ones instruction is given in drawing tangent planes to surfaces, the intersections of planes and surfaces with surfaces, and on the development of surfaces. A collection of problems concludes the book. Much care has been taken to render them definite and suitable as illustrations of the particular principles under consideration.

Easy Practical Mathematics. By H. E. Howard. iv + 169 pp. (Longmans.) With Answers, 1*s.* 6*d.* Without

Answers, 1s.—This book, like others of the same character, is designed to instruct technical students in the management of the mathematical machinery most useful to them in their special callings. The course of work includes decimal arithmetic, approximations—we regret to see the inverted multiplier—elementary algebra, including graphs and the solution of easy equations, plane and solid mensuration. The book seems, on the whole, well fitted to fulfil its object.

Elements of Algebra. By A. Schultze. xii+309 pp. (New York: The Macmillan Company.) 4s. 6d.—This book may be useful to anyone who wishes to gain a knowledge of the outlines of the subject as far as the binomial theorem with a minimum expenditure of time and labour. All difficult parts of the theory, as well as special methods and troublesome types of examples, have been omitted. The chapter on graphs gives within a brief space a very good account of the more useful types. The examples are numerous; geometry, physics, and commercial life furnish a number, but the essentially American character of those of the last type renders the book unsuitable for use on this side of the Atlantic.

Pitman's Correlated Arithmetic. Book VII. By T. W. Trought. x+130 pp. (Exercises, Answers, Notes.) (Pitman.) 1s. 4d.—Pupil's Edition (exercises only). 65 pp. 4d.—A useful addition to this series of books, containing exercises on the higher parts of arithmetic, mensuration, elementary algebra, including graphs and logarithms. In the teacher's edition the answers are printed on the page facing that containing the corresponding exercise, and they are followed in each case by notes on method and additional exercises for oral work. Some of the exercises require practical measurements. The book deserves to be widely known and used.

Matriculation Geometry. Books I.–IV. xviii+348 pp. 1 rupee 4 annas. *Conic Sections made Easy.* viii+97 pp. 8 annas. By Saradakanta Gangopadhyaya. (Calcutta: The Students' Library.)—These two books, by the same author, are written to meet the requirements of students preparing for the Matriculation and Intermediate examinations respectively of the University of Calcutta. The first is an excellent introduction to geometry on quite modern lines, and although written in conformity with a syllabus, the author has included theorems which render it more complete. Of course, there is not much scope for novelty, but there are two proofs of theorems which we have not seen before. One is of Euclid i. 19, and the other, of Euclid i. 25, is interesting, having been discovered by the present Vice-Chancellor of Calcutta University at the age of eleven years. Considerable attention is paid to the logical principles involved; and in addition to the formal demonstrations there are numerous explanatory notes, which should be very helpful to the student. There is an abundance of examples and a section on practical work. In spite of its title, we fear the second book will fail to make geometrical conics "easy" or attractive to the average student. The parabola and ellipse alone are considered. The method of treatment is similar to that adopted in the "Geometry."

Science and Technology.

Science in Modern Life. Edited by Prof. J. R. Ainsworth Davis. Vol. vi. vi+225 pp. (Gresham Publishing Co.) 6s. net.—With this volume, the handsome series to which it belongs is concluded. Commencing with astronomy, the circle of the sciences has been surveyed and the main lines of development described by authors who have intimate knowledge of their respective subjects. The plan was ambitious; but, on the whole, we do not hesitate to say that it has been admirably carried out. The present volume is devoted entirely to engineering; and the author, Mr. J. W. French, has succeeded in presenting as good a general view of this wide subject as could reasonably be desired. Indeed, we know of no more attractive and instructive volume to put into the hands of any boy interested in machinery of any kind. The text is interesting and sound, and the illustrations are not only numerous, but also exceptionally clear. In this single volume attention is given to practically all the aspects of engineering science. For instance, among the subjects dealt with are water turbines and fuels, water-tube boilers, steam turbines, steam, gas and oil engines, internal-combustion engines, electrical machinery, metallurgy, Brennan's mono-rail, motor-cars, steamships, canals, aërial navigation, and modern ballistics, and in every case the subject is presented in a modern light. The author, editor, and publishers are to be congratulated upon the production of a very satisfactory volume which should be of distinct service in promoting interest in the achievements of engineers. A sectional model of the rose is issued with this volume, and it will form a useful guide to the identification of the various parts and structures of the actual plant.

Typical School Journeys. By G. G. Lewis. 140 pp. (Pitman.) 1s. 6d.—The school journey is now a recognised institution, though still in the experimental stage of development. Many teachers who are convinced of its great educational value are embarrassed by its seeming lack of horizon, and are anxious to know how more adventurous spirits have fared on the new road. These will welcome Mr. Lewis's "descriptions of open-air geography and nature lessons, which have been actually worked out by a school in North London, either in school time on Hampstead Heath, or in holiday excursions farther afield." The book is eminently practical, and gives useful hints on the management of young pupils under the novel conditions.

The Ruskin Nature Reader: Intermediate Book. Edited by G. R. Bennett. x+180 pp. (Dent.) 1s. 6d.—This volume carries out successfully the idea of the series: to illustrate the influence which the observation of natural phenomena has had on our literature. It was a happy thought to include with the more familiar—not to say hackneyed—extracts from earlier writers examples of the work of H. W. Bates, Richard Jefferies, and W. H. Hudson. The book contains a number of appropriate illustrations.

Seasonal Nature Lessons for Infant Classes and Standard I. By Margaret Riach. 150 pp. (Chambers.) 2s.—The lessons in this book are too advanced for children in "infant classes and Standard I.," but they might be given to somewhat older pupils with good results. The outline drawings for blackboard sketches form one of the best features of the book.

The Trees We Meet. By J. W. Gofton. (School Nature Study Union, 1, Grosvenor Park, Camberwell, S.E.) Each, 2½d.; 1 doz. for 1s., 50 for 2s.—A four-page leaflet containing short descriptions, with sketches, for the use of boy scouts and others interested in the identification of common trees. It is well suited for the purpose.

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 New Headmaster of Repton.

IN the August issue of THE SCHOOL WORLD "Onlooker" (whose notes are a monthly pleasure to your readers) refers to Mr. Temple's appointment to the headmastership of Repton as defensible only on exceptional grounds, and asks that these should be clearly stated. Others more nearly concerned with the appointment could perhaps do this more suitably than I; but as one of those who most heartily welcome Mr. Temple's appointment, and believe that it may prove of historic importance to English higher education, I venture to take up your contributor's friendly challenge.

It is not too much to say that those who have been engaged with him in public and private work feel about Mr. Temple what his friends felt about Dr. Arnold in the Laleham days when the vacancy at Rugby was announced. He is a born leader of men. As an Oxford tutor he stands out as one of the two or three men in the University whose influence with undergraduates is always remarkable and often decisive. He is young enough to have a fresh knowledge of the working of the public-school system from inside. From his Oxford experience he is intimately acquainted with the product of the public schools. Among young men, many of them not older than those at the top of the Sixth Form in the public schools, he has been quickly recognised as a candid and vigorous thinker who, in political and artistic questions not less than in religious and philosophic, shirks no difficulties, practises no evasion, and thinks independently for himself. As president of the Workers' Educational Association he has taken a very active part in a movement of far-reaching importance which touches some of the most thoughtful men and women in all parts of the country. He will bring to Repton (where, if I am not misinformed, his appointment was strongly desired, not only by the retiring headmaster, but by the members of the staff) the power of personal sympathy and of a sustained enthusiasm, constructive and organising ability, great disinterestedness, and a firm grasp of the principles which should govern the relations between the great English public schools and the State.

The future, of course, alone can show whether those are right who doubt the wisdom of his appointment or those who, like myself, believe it to have been eminently wise. But I trust that "Onlooker" will take in good part these few words from one who knows Mr. Temple well and believes in him. M. E. SADLER.

Weybridge, August 12th.

I HAVE been allowed to see in proof Prof. M. E. Sadler's letter on the new headmaster of Repton. He has very kindly supplied just what so many wanted, that is, a clear statement of the exceptional grounds on which Mr. Temple was appointed. If Mr. Temple is "a born leader of men"—and boys, then without doubt teachers in secondary schools will be more than satisfied. The possibility of Mr. Temple's being a second Thomas Arnold had suggested itself to me as an explanation. Of course, it might be urged that such an election is primarily the affair of the governing body concerned, but it has its effect on the whole profession of secondary-school teaching. Prof. Sadler's courteous letter may be taken as a tacit admission on his part of the truth of the latter proposition. I am grateful that he recognises in my note simply a "friendly challenge." My remarks were, indeed, only a cry for more light. ONLOOKER.

The Teaching of Constitutional Law and History in Schools.

IN putting forward this plea, I know I am laying myself open to criticism on many points, but I firmly believe that the introduction of this interesting and valuable subject would be beneficial to the boys of the present day. English history as taught in schools is of little practical value in these utilitarian days, and I submit that by the time a boy is fifteen years of age he ought to have a sufficient knowledge of our history to leave it and proceed with more valuable work—be it understood, however, that these remarks do not apply to boys reading for history scholarships at the universities.

Boys could gain in the final two years of their school life—taking seventeen years as the average age of leaving—a sound notion of the working of our Constitution which would be of practical use to them in after life. I have before me the questions set in the Oxford Local (Senior) examinations held on July 21st of this year, and have taken two questions at random. I have also taken two questions from Bar Examination Papers on Constitutional Law and History for comparison:

Oxford Senior.—(*a*) Why did England and France send an ultimatum to Russia in 1854?

(*b*) Did the Reformation in England strengthen or weaken the Tudor kingship? Give reasons for your answer.

Bar Examinations.—(*a*) State the principles of English law with respect to the right of public meeting.

(*b*) What disqualifications are imposed, and for what cause, by the Corrupt Practices Act, 1883? Before what tribunals do such matters come?

Now, looking at these four questions with an open mind, I do not think that a knowledge of the first two, interesting though they are, is of such practical value as a knowledge of the last two.

An objection may be raised that to teach these subjects in schools would be to encroach on the preserves of the Inns of Court, but as it is not given to everybody to become members of these societies, the majority should be allowed to obtain a knowledge of the structure and working of our Constitution during their school life. As it is, nowadays, the aim to give boys an education which will be of practical value to them in after life, I submit that my plea is worthy of serious consideration, and shall be interested to read the criticisms, which may rouse some more able pen than mine to take the matter up.

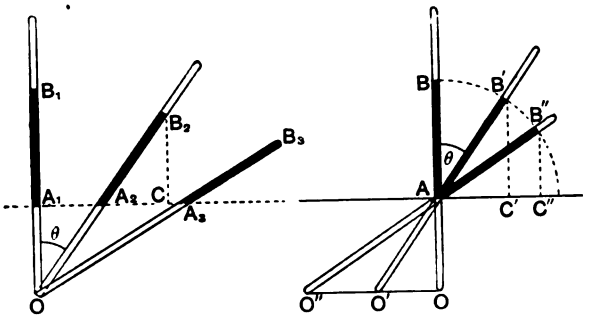
C. D. LOVEGROVE.

Queen Elizabeth's School, Barnet.

A Simple Method of verifying Boyle's Law.

IN Dr. Miller's method of verifying Boyle's law in the July issue of THE SCHOOL WORLD, the triangles A_1A_2O and B_2CA_2 are inverted as regards each other, and the curve traced out by the end B of the mercury is of a complex nature. The following method arrives at the same result, but has the triangles similarly situated as regards each other, and the curve traced out by the end B of the mercury is a circle.

Using a tube similar to that described by Dr. Miller, place the lower end of the mercury at a point A on a squared blackboard, and have the tube vertical. At O draw a line perpendicular to BAO. Rotate the tube through an angle θ and bring the lower end of the mercury to A. It will be seen that O travels along the straight line previously drawn, and since AB keeps constant in length, the point B describes a circle of radius AB round A.



In any position the mercury pressure is B'C', and the length of the air column AO'. The product of these two will be found to be constant.

This is evident, since B'C' : B'A = AO : AO',

$$\therefore \text{B'A.AO} = \text{B'C'.AO'},$$

and AB is of constant length.

If the circle and the straight line are drawn on the blackboard, measurements for a p.v. curve can be read directly.

JAS. M. C. WILSON.

Dollar Institution, Dollar, N.B.

Shortcomings in Mathematical Tables.

IN the July issue of THE SCHOOL WORLD I notice a letter from Prof. Bryan entitled "Shortcomings in Mathematical Tables." As a joint author of Gibbs and Richards's "Mathematical Tables," I should be grateful if you would allow me a few lines of your valuable paper in which to offer some comments on Prof. Bryan's interesting letter.

In the first place, I am quite at a loss to understand Prof. Bryan's contention as to the necessity for complementary logarithms. I have found by experience that a class of boys very readily learn to "pick out" the cologs (or, as I prefer to call them, *minus*-logs) from the tables of logarithms themselves.

Let me quote Prof. Bryan's own example. Any of my pupils, of average age 14½ years, would work out the example as follows:

Ex. Find— $\dfrac{0{\cdot}0357 \times 72{\cdot}89}{3{\cdot}216 \times 0{\cdot}5484}$.

$$\begin{aligned}
\log\ 0{\cdot}0357 &= \bar{2}{\cdot}5527\\
\log\ 72{\cdot}89 &= 1{\cdot}8626\\
-\log\ 3{\cdot}216 &= \bar{1}{\cdot}4927\\
-\log\ 0{\cdot}5484 &= 0{\cdot}2609\\
\hline
0{\cdot}1689 &= \log 1{\cdot}475.
\end{aligned}$$

I have found no difficulty in getting boys to use this simple rule for finding minus-logs or cologs: "Add 1 to the characteristic and change the sign: write down the complement of the mantissa."

Might not Prof. Bryan's own criticism apply to tables giving cologs when he says: "The plan in question necessitates consulting the same number of tables instead of finding the required information under one entry. There is, further, the constant risk of making a mistake and using the cosine [read colog] table when the sine [read log] table should be consulted . . ."?

Surely, too, four-figure tables should be regarded to a certain extent as introductory to the full seven-figure tables, and one can hardly imagine the latter giving cologs.

In the example marked "*c*" in Prof. Bryan's letter, I think our tables effect a further improvement even on his method, inasmuch as the banality of adding 10 to logarithmic trigonometric ratios is avoided.

This enables logarithmic secants and cosecants to be written down readily from logarithmic cosines and sines, as the rule quoted above applies with equal facility. Thus log sec 32° 18′ = − log cos 32° 18′ = 0·0730. I contend that with this arrangement tables of log secants and log cosecants are unnecessary.

R. W. M. GIBBS.

King Edward VII. School, King's Lynn.

Holidays in France.

WE were glad to see in your issue of June, 1910, a short mention of the Office International. Allow us to send you some further particulars in order to let your readers know the interest of our organisation for English pupils and families who are thinking of taking holidays in France.

Several branches, especially for British travellers, have been established in our Bureau. We are able to secure good boarding-houses and family residences; at this address private French courses and lectures are given by official teachers connected with the Paris University. Three times a week excursions in Paris and the environs are arranged under the direction of our touring branch; and a lecture-room containing 100 papers and magazines is open from 9 a.m. until 7 p.m. for our members.

The British Embassy at Paris has approved our scheme. We hope to become better known to English people as time goes on.

OFFICE INTERNATIONAL.

1, Rue de la Trinité, Paris, IX^e.

The School World.

A Monthly Magazine of Educational Work and Progress.

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The School World

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THE TEACHING OF HANDICRAFT AND ELEMENTARY SCIENCE IN ELEMENTARY SCHOOLS.[1]

By J. G. LEGGE, B.A. (Oxon.),
Director of Education, Liverpool.

IT may be accepted as a truism that the aim of the elementary school is to afford a general education, such an education as may indeed form the basis of specialisation afterwards, but in itself only proposes to turn out a child at fourteen or thereabouts as well equipped as may be to play some part on the great variety stage of life. This paper contains no attempt to upset the sound principle thus enunciated, but it will raise the question whether the principle has been rightly understood, whether as a matter of fact there is a colourless abstraction which can be expressed in terms so as to serve, not as *a* type, but as *the* type. The common interpretation of a general education is an all-round preparation of the individual for life. But in face of the facts that individuals differ, and that life has a particular signification for every individual, we can scarcely fail to recognise that the education which fits one individual for his life cannot always be expected to fit another for his, and are driven to the conclusion that there is no one type of general education. And it then becomes a subject for consideration whether a scheme of education is not entitled to be styled a general education, even if it has a certain colour, or, to change the metaphor, is so designed as to give a certain bias.

That a general education may yet have a particular bias is now accepted in secondary education. The old idea that the only type of general education is the classical type, based on linguistic and what was supposed to be intellectual training, is gone. In our English public schools we have had for years our classical and modern sides. In Germany, the home of organisation, the differentiation of types is even clearer, and the old classical gymnasium has now a twin brother in the Oberrealschule. A third type, with a commercial bias, is asserting itself both in England and Germany, and it will not be long before these two nations of manufacturers, business-men, and shopkeepers develop this type to something like an equality with the other two. Why not some such differentiation of types in the elementary school?

Here it may be claimed that we have little to learn from Germany in the matter of elementary education. We may still envy the elaborate organisation, the lofty plane of German secondary education, but many skilled observers, the latest of them Mr. Blair, of the London County Council, have taken stock of the comparative position in elementary education, and hold that in that sphere we are more than equal, even superior. The reason is no doubt that public opinion, which has only of recent years begun to stir itself over our public schools and our secondary education, has long been alive to the concerns of elementary education. And it is right that in England the main interest should be centred in our elementary schools, for in this country they are the key to the whole situation. To begin with, the bulk of the whole population receives its education in them. The majority of their scholars, it is true, do not proceed to secondary or technical schools. But the rapid growth of municipal secondary schools renders it probable that before long the majority of young people in England receiving a secondary or a technical education will be found to have received their early education in an elementary school. Complaints are rife on the technical side that elementary-school pupils come up to the technical institutes badly prepared, and it is strange to hear, as we do, protests from the technicians against any attempt to introduce handicraft and applied science into the elementary school. They want the children well grounded in a general education; they denounce early specialisation. There is no specialisation in the case. What we are seeking for is a variety of schemes of general education, each of which will be a better preparation for life than the colourless abstraction of the past.

It is impossible to cover the whole ground in a single discussion, and this paper is limited to a discussion of the problem as it affects the boys of an urban school, though it assumes a parallel course for girls, with the substitution for the boys' workshops of a domestic or housewifery centre for senior girls, with facilities for whatever more of women's handicraft it be found convenient to add. The problem as it affects rural schools must

[1] A paper read before the Educational Science Section of the British Association at Sheffield, September 5th, 1910.

be left for those conversant with the economy of rural districts to work out; and they are already at work, with the large measure of success that has been reached in Canada to buoy their hopes.

The particular type with which we are dealing to-day is that designed to give the child a general training which, without unfitting it for any clerical pursuit, will render it apt to profit by the specialisation of the technical school. This type of education is already so well known on paper as to have earned the popular title of "practical education." No body in the country has been more insistent on "practical education" than the British Association. Year after year it has called for reform, and has proved the sincerity of the missionary spirit that has animated it by the generous schemes and detailed syllabuses which it has published in numerous reports, notably those of 1906 and 1908. The Association has reason to be well satisfied with the position to-day, for the present year bids fair to mark an epoch. The claim of the Association for the introduction, as intrinsic parts of the school curriculum, of manual training, under the most liberal interpretation of the term, and of elementary science, in the most practical sense of the term, has been winning wider acceptance year by year. But the whole situation has been changed by the issue early this summer of the Board of Education's memorandum on manual instruction in elementary schools. This memorandum was not issued when I accepted the invitation to open a discussion on the subject: had it been, I might almost have urged that it rendered any paper superfluous. It interprets manual instruction as widely as even the British Association could desire; it bases on psychological and physiological grounds, which the Association must approve, the claim for the inclusion of manual instruction as an intrinsic part of the elementary-school curriculum; it gives a useful summary of what is now being done in the country on the lines recommended, and adds most valuable and far-reaching suggestions with regard to organisation and method. Moreover, it urges all its points with a sweet reasonableness, a modesty and restraint which will render it all the more effective.

The troublesome search for arguments is now over; the scientific basis of manual instruction is now accepted. We have a formula to hand which makes it plain to the meanest capacity how by the introduction of manual training into schools we do not hamper, but positively promote, intellectual development. Early in the 'eighties Charles Godfrey Leland, the American educator, laid it down as a principle for which there was physiological support that

> from seven to fourteen years of age a certain suppleness, knack, or dexterous familiarity with the pencil or any implement may be acquired which diminishes with succeeding years. A principle which is equally true of memory and quickness of perception.

Now the enlistment of experimental psychology in the service of child-study during recent fruitful years has revealed the scientific basis of Godfrey Leland's dictum, and the educational value of all manual work. The mind is a part of the body, and grows by bodily exercise precisely as any other part of the body, and the ages from seven to fourteen are invaluable for building up the structure of the mind as of the trunk and the limbs. If, then, you neglect due exercise of the hands, as of the body generally, you will not only deprive the child of its birthright, manual dexterity, but are in danger of even stunting its intellectual development. The gist of the matter has been clearly if somewhat crudely stated in the introduction to the Board of Education's recent syllabus of physical exercises.

> There are in the brain certain "centres" or masses of brain matter which preside over co-ordinated movements of all kinds. These centres begin to perform their functions in early life, when the child learns to stand, to walk, or to talk. As new movements are attempted, new centres become active, certain nerve impulses become more or less habitual, and thus new nerve paths are opened up and established, and the connections between the centres in different parts of the brain become increasingly well defined and correlated. It has been found that within reasonable limits the greater the scope of the physical education the more complex and highly specialised and developed do these centres become.

What is said there of those bodily exercises comprehended in physical training is equally true of those which find their expression in schemes of manual instruction. The principle is plain enough, the difficulty lies in its application. We recognise that we have been fairly right at bottom, in the infant school with its kindergarten, and at the top, when boys and girls reach the grant-earning age and pass into manual instruction or cookery and laundry classes. But there is the yawning gap between. How is that to be filled up? "Clay," say some. "Paper leading on through cardboard to wood," say others. "Anything you like," say the apostles of free expression; "clay, or paper, or cardboard, or wire, or bent iron, or string, or wood, or cloth, or leather." Then as to a basis for your models. "Geometry," say some. "The illustration of your other lessons; *e.g.*, nature-study, geography, history or literature," say others. "Anything you like," again chime in the apostles of free expression.

Out of this welter of discussion does not the truth emerge, viz., that there is no one way of applying our principle? Truth is a jewel of many facets, and we must not fix all our attention on one alone. I have followed the discussion assiduously, and have been able to disentangle at least five main purposes which are in mind when the introduction of more manual work in schools is demanded. There may be more, but these are submitted for consideration to-day:

(1) To develop certain centres of the child's brain.

(2) To afford scope for acquiring manual dexterity at the age when such dexterity must be acquired if it is to reach the pitch it should in maturer years.

(3) To afford scope for exercising the child's constructive faculties, or, if the term "faculty" be objected to, to afford scope for self-expression.

(4) To make other school subjects more real to the child—in other words, to bring into relation with every possible subject the third dimension.

(5) To keep the child in touch with its environment, with what "life" means to it, not to some imaginary person, and to effect this by giving it something to do which it recognises as real and useful work, even if the object be but a toy (which to a child is a real object), and have but the uses of a toy (which are infinite), or even if it be the darning or mending in school of its stockings, socks, breeches, or skirt.

If, then, there are all these different objects in view, surely it is vain to seek for one scheme, one kind of material, one tool or set of tools which will accomplish all. True, we cannot devise any scheme which will not satisfy at least two requirements, for the first will be inherent in all. Most will satisfy three fairly well. But the common-sense conclusions seem to be these:

(1) We need several sets of exercises in different materials, each devised to carry out one main purpose in chief.

(2) The main purpose on which stress is to be laid will differ (*a*) in different schools, (*b*) at different ages, and possibly (*c*) even with different children of the same age in the same large school.

(3) The time to be devoted to manual work will differ at different ages and in different schools, the limit of the manual side in any case being the point beyond which it ceases to promote the child's intellectual development.

The Board's memorandum recommends that head teachers should have complete freedom to frame suitably graded and correlated schemes of instruction for their particular schools. This is the first essential; there must be no cast-iron system of manual instruction within any district. To fill the yawning gap between the infant school and the seniors the memorandum offers a large choice of occupations or manipulative exercises which have actually found their place in English schools. But perhaps on one consideration not enough stress has been laid, viz., the fifth of those I have ventured to urge above, the advantage of keeping the child in touch with its environment by giving it something to do which it recognises as real and useful work. And here, in the spirit of Goethe's profound maxim, we cannot be too humble:

> In all things, to serve from the lowest station upwards is necessary; to restrict yourself to a trade is best. For the narrow mind whatever he attempts is still a trade; for the higher an art; and the highest in doing one thing does all, or, to speak less paradoxically, in the likeness of one thing he does rightly he sees the image of all that is done rightly.

To teach boys as well as girls in the lower standards or grades, particularly in schools situated in poor neighbourhoods, to sew and knit or darn is admirable. From the manipulative point of view these exercises are good; you find boys engaged at them in the schools of Sweden, the home of manual instruction; and who dare smile at our handy-man, the sailor-man, who can thread and use a needle as easily as he can fill and smoke a pipe? Indeed, the sight of a boy darning his own socks, after his mother has washed them, or putting a patch on shirt or trousers, has a deeper signification than may at first appear. He is not merely doing something useful, he is doing something calculated to raise his self-respect; more than that, he is doing something that will save another person trouble, and thus, as Goethe would not have disdained to argue, he is learning a practical lesson in social service, the very basis of citizenship. And we cannot begin too early to make a habit of this. Mr. Temple, the new headmaster of Repton, in an address on "The Education of Citizens," has referred to Aristotle's statement that there are three sources of virtue—nature, habituation, and education, of which the second, habituation, is the most important. But Mr. Temple complains that when children go to school they are already moulded and beginning to be stereotyped into the form that early influence has determined. That is hardly true so far as the elementary school is concerned; the children are not moulded, not stereotyped, when they enter it at four or five years of age. The elementary school shares with the home, far more than does any other school, the duty of forming the child's habits. Hence the predominant importance of the elementary school, and hence the vital necessity for getting into it the right atmosphere, not the rarefied atmosphere of an abstract curriculum, but a natural atmosphere charged with interests appropriate to the children who frequent it, and shot through with flashes of light and colour that stimulate their eager curiosity.

It is not to be supposed from the reference to the mending of clothes in the foregoing paragraph that this is suggested as a definite exercise in all elementary schools. It is good for some, but not for others. One kind of manual work, not without its value from the point of view of social service, can be safely recommended to all, viz., the making of simple apparatus, and the most variegated, picturesque, and even amusing objects and models and toys for use in the infants' department. It is ridiculous that we should have to purchase for the use of the infants' department a single scrap of cheap foreign-made stuff. But on the manipulative side let us not allow either the zeal for correlation or the zeal for social service to eat us up altogether: let us reserve some little time when a boy may make anything he please, out of whatever he can lay honest hands upon, simply and solely for the fun of the thing.

So far we have been doing little more than discussing such manipulative work as is suitable for the juniors (up to about eleven years of age) in every urban elementary school in the country

Before passing on to the final stage, the practical curriculum for the senior classes, covering the last two years or so of the elementary-school life, it is necessary to say something of the part that elementary science, running parallel with manipulative work, should play in the junior classes.

First of all, there will be general agreement that we must not with pupils so young attempt to teach anything in the nature of formal science. What we cannot begin too early is the inculcation of the scientific habit, with a view to developing later the scientific habit of mind. To guide us we have, thanks largely to Mr. Heller, in the report on "Studies most suitable for Elementary Schools," with its full and suggestive appendices, published by the British Association in 1908, a document of hardly less value than the Board of Education's memorandum on manual instruction already referred to. The following conclusions of that report have won acceptance in a circle extending widely outside that of persons interested in elementary education:

(1) Formal chemistry, physics, electricity and magnetism are of doubtful value.

(2) Simple measurement is the basis of much of the best scientific teaching.

(3) Demonstration must be supplemented by practical work, and must itself be real *demonstration*, not *lecture*.

(4) Note-taking is to be encouraged as the basis of independent study.

(5) Practice, to adopt Sir Philip Magnus's words, should precede theory, and the explanation of an experiment or an exercise should, as a rule, follow its performance.

(6) A lesson without some application to the common experience of the class is, in the elementary school, to be regarded with suspicion.

With our juniors, then, let us be careful to follow in arithmetic the lead set by the British Association's report of 1906, and see that the instruction in that subject proceeds from the concrete to the abstract, and that actual measuring and weighing hold a prominent place. The measuring need not, with juniors, go beyond that of lengths and areas, but the exercises should be carefully designed "to give a real knowledge of the manipulation of numbers in the decimal system not involving the use of more than two digits after the decimal point." The weighing and the measurement of volume may be restricted to actual practice in the use of such weights and measures of capacity as are ordinarily to be found in the retail shop with which a middle-class household has dealings. Further, it will be found possible to give, through clay and cardboard modelling, some first notions of geometry, but the less formal these lessons the better. Plain geometrical models in cardboard are extremely dull things to children, because they are so meaningless to them, whereas there is an infinity of most entertaining models, a cottage, a church and steeple, a windmill, a wigwam, a cart, which contain a variety of geometrical forms, the relationship of which, *after they are made*, to the plain geometrical model may be pointed out with advantage.

First notions of elementary science can hardly be inculcated at the junior stage save through object lessons. But the scheme must be no disconnected series of lessons on objects that come most readily to the teacher's hands, or the odds and ends to be found in an ill-arranged museum cupboard. It must be carefully drawn up by the class teacher under the guidance of the headmaster, whose duty it is to see that the schemes of the various classes are properly co-ordinated. The subject-matter of the lessons should make some appeal to the actual experience of the children; the children must examine the objects for themselves. The teacher's must not be the only thumb and fingers busy. General practice points to plant life and plant forms as furnishing as educational a series of simple object lessons as can be devised, nor for a scheme introductory to the more systematic work of the seniors can there be a more useful suggestion, with all its hygienic import, than that contained in the British Association's report of 1908 on the nature and uses of water, air, and food materials.

The lessons on water should involve the consideration of its sources, the work done by a stream, the river, and the sea, the change of water into ice and steam, the evaporation of water, the presence of its vapour in the atmosphere, and the formation of cloud; the dissolving properties of water, its uses as a food, and the large amount of water present in nearly all food materials. The lessons on air might include some very simple experiments to show its reality and the pressure it exerts, leading to some first ideas as to its weight when hot and cold, the effects of heat upon it, and its relation to burning and breathing. A few of the typical food-stuffs, such as eggs, flour, and sugar, might also be considered, with the object of showing that they are all combustible and contain carbon and a considerable quantity of water.

We now reach the seniors, children of twelve or thereabouts, and have to consider how we can safely give their scheme of education, their curriculum, a bias, without entailing the sacrifice of its claim to be a general education. We need not blink the fact that unconsciously the curriculum of a whole school must be loaded with a certain bias if it be really the free expression of the wishes and the judgment of those responsible for the management of that particular school. But it is time enough to develop the conscious bias when reason begins to assert itself, when the child approaches twelve years of age and reaches the topmost classes of the elementary school, with two precious years in front of it of which much may be made if they are wisely used. Up to the stage when reason begins to play its part it does not matter much, within the limits of common sense, what is taught; the way the teaching is done, and the spirit in which it is done, are the main concern. The young child, as Mr. Temple has happily expressed it, is powerfully impressed by what it cannot understand precisely because it cannot understand.

If he could understand he could also criticise; but as he cannot understand he is of necessity passive in the hands of a force which he cannot resist because he is unconscious of its existence. . . . The early influences to which the child unconsciously submits are in normal cases the most powerful determinants of its character, both because they operate while the soul is still plastic and because the child can offer no resistance.

This is the view of ancient philosophy, and it is confirmed by modern psychology. But there comes a time, and that before the elementary school age is past, when the child is not satisfied with assimilating the results of observations made through its senses. It begins to chew the cud, to ruminate, to think, to criticise. Now is the time when it is not merely safe, but actually imperative, to make a change in our scheme, if we are to do justice to our charge. I venture to recommend that for the last two years of the elementary-school life the boy may safely, nay, with advantage, spend half his school day in a school workshop, or the girl in a school domestic centre; and I can see further advantage in boy and girl exchanging *rôles* for one morning or afternoon a week. I should boldly divide the curriculum into two sides, literary and constructive, with only accommodation in class-rooms for half the senior classes, the remaining accommodation being provided in workshop and domestic centre. The seniors, then, would pass in alternate shifts, morning and afternoon, from class-room to workshop, or from workshop to class-room. On the literary side of the curriculum would count such subjects as English, geography, history, all with special attention to independent study on the "note-taking" basis, and so much of the mathematical training as is not better given in the workshop. The constructive side will be mainly made up of manipulative work at the bench, work both in wood and in metal, drawing, not in drawing books, but on drawing boards, experimental science in close correlation with the manipulative work, and such mathematical exercises as are best practised in close association with either bench work or science. Such recreative subjects as singing and physical drill may be taken on either side of the curriculum: if I may indicate a preference I should assign the drill to the literary side, to which it will naturally afford a physical relief, and the singing to the constructive side. In a school workshop of the right sort there will be a buoyancy of spirit of which song will be but the natural expression.

In considering the precise part that manipulative work should play with the seniors, we may recall with advantage the limit prescribed above to the manual training side in an elementary school, viz., the point beyond which it ceases to promote the child's intellectual development. At the age when reason begins to assert itself the part that experimenal science should play becomes of vital importance. If manual work has been accorded its due place in the curriculum of the juniors, it will be surprising with what manipulative skill they will be found to be endowed when they enter the senior section. In every school workshop, as suggested above, there ought undoubtedly to be a certain time set apart for seniors as well as juniors for free constructive work, the making of things of one's own choice for the sheer pleasure or the mere fun of it; but the main scheme must be closely correlated with experimental science, and broadly designed to illustrate scientific principles.

Now there is here afforded a wide choice, and I hope I may be acquitted of any charge of dogmatism, if I suggest as the simplest basis on which to found our preparation for technical training a course in practical physics. And we shall naturally commence by developing the practical arithmetic in the elements of which we are to assume our juniors have already been drilled. This with the seniors must include graphs and the use of symbols, and must lay stress on the measurement of length, of curved lines, of the ratio of the circumference of the circle to its diameter, of area, of rectangular figures, of the circle, of irregular figures, of volume, of regular and irregular solids. There will then be entailed instruction and practice in the use of simple measuring vessels, the burette and pipette, the use of the balance and the density bottle, and experimental proof of Archimedes' principle and its application.

I have examined several ingenious schemes designed to afford the senior pupils in an elementary school a good grounding in practical physics, and have attempted myself to devise one. But none of them seems so practical and so comprehensive as the remarkable scheme to be found in Appendix II., page 33, of the "Report on Science Teaching in Public Schools," published by the Board of Education in 1909, and I make no scruple in appropriating for the purpose of this paper practically the whole of its first year's syllabus. It may be doubted whether even an English public-school boy of from twelve to thirteen can digest so much in a single year, but as this is apparently taken for granted, we may hazard the suggestion that the English elementary-school boy can attack it with fair success in two. The syllabus is as follows, and the treatment of subjects all through must be understood to be qualitative, not quantitative.

PHYSICS SCHEME.

Mechanics	Hydrostatics	Light	Heat
Levers	Barometer	Mirrors and lenses	Steam pressure
Moments	Siphon pumps	Telescopes	Steam gauge
Work	Fountains	Microscopes	Simple steam engine
Speed ratio	Water press	Lantern	Hot air engines
Efficiency	Balloon	Spectacles	
Mechanical advantage	Air pump	Eye	
Wheel and axle		Colour	
Windlass			
Capstan			
Pulleys			
Cranes			
Belts and shafts			
Bicycle			
Toothed wheels			
Inclined plane			

Sound	Magnetism	Voltaic Electricity	Frictional Electricity
Idea of waves	How to make a magnet	How to make a simple battery	How to produce electricity
String instruments, piano, harp, &c.	Action of current on magnet	Use of resistance coils, commutators, shunts, galvanometers, ammeters, voltmeters,	Electroscope
Resonance boards.	Electro-magnet	Electric light, bells, induction coils	Leyden jars
Wind instruments		Dynamo	Lightning
Organ pipes		Motor	
Whistles		Electrolysis and electroplating	
Siren			
Musical scale			

The claim must be conceded that this is a successful attempt to arouse interest in scientific study, and particularly in physics, by giving some insight into the application of principles to the phenomena of everyday life. And what a wealth of suggestion for the manipulative work of the boys is contained in the scheme, if, as ought to be the case, they make for themselves the rough working models of machines, instruments, and apparatus absolutely necessary for the illustration of each section! It is difficult to imagine a happier union of handicraft and science. And the very difficulties that the boys will encounter in their manipulative work will, as the author of the scheme claims, show them the need for, and the value of, further work, *quantitative* and not merely *qualitative*, if they are to make conscious progress. Thus they cannot fail to develop something of that scientific temper of mind which, rather than the mere acquisition of facts, should be our aim.

There are but few words I should add, and first with regard to the teachers. It has been made clear that the whole of the work done on the practical or constructive side, whether manipulative or scientific, should be as much under the control of the head teacher as the work in any class-room. It will be necessary at the outset to attach to his staff one teacher with special qualifications enabling him under the head teacher's directions to carry on the constructive and scientific work, and also, as in any full-sized manual instruction centre, an assistant-instructor. But I venture to endorse very strongly the opinion expressed in the Board of Education's memorandum:

> There are a large number of the ordinary teachers who have a considerable capacity for handwork, and we think it most desirable that these should be given an opportunity of practising and increasing their skill by teaching of this kind.

My old experience in relation to the very practical schools controlled by the Home Office has given me a higher opinion than seems common of the adaptability of the school teacher, when given the chance of coping with new conditions. I have known him become a good farmer or market-gardener, a capable mechanic, the businesslike general manager of a school-factory, or even a real handy sailor-man.

Finally, I make bold to claim that such a scheme as is here outlined (and there is no pretence that this is the one and only scheme suitable for its particular purpose) cannot reasonably be attacked as specialisation. It does give a bias, but such a bias as may legitimately characterise a general education. Boys who have taken advantage of it will have had their general intelligence sharpened, will have cultivated the scientific habit and be in a position to attack methodically whatever sort of problem be presented to them, and will have acquired incidentally a vast amount of useful general knowledge; and all these acquirements, while undoubtedly to the advantage of the lad passing on to a specialised course in technology, will none the less be no handicap, but a precious possession, to the boy of fourteen who enters retail trade, or specialises later on the clerical rather than the constructive side.

THE EXAMINATION OF INTELLIGENCE IN CHILDREN.[1]

By OTTO LIPMANN, D.Phil.

AS we are at present in the experimental stage of the problems of intelligence-tests, it would be rather rash to enter into a discussion of results. I shall therefore confine my attention to methods, and try to emphasise the importance of some points that must always be taken into account, and be clearly marked out in the process of testing intelligence. I shall refer principally to the work of Binet and Simon, "Le Développement de l'Intelligence,"[2] because their method seems to be more nearly adequate to the needs of intelligence-tests than any other known to me. The method of Binet and Simon has been thoroughly examined and improved in an extensive series of experiments[3] of Dr. Bobertag, the assistant of the Institut für angewandte Psychologie und psychologische Sammelforschung, and I am happy to be able through his kindness to make much use of the critical results of these investigations in framing my paper.

Before approaching our main subject—the determination of intelligence—we must form for ourselves as clear an idea as possible about the nature of intelligence as such; because the first requisite of an intelligence-test is, that it be really the *intelligence* that is tested, and not some other mental function only more or less distantly connected with intelligence. For my own part I attempt to characterise thinking and the intelligent man with the help of the conceptions of "inhibition" (Hemmung) and "leading-idea" (Obervorstellung) in the following way: Thinking consists, as Hugo Liepmann has said, in bringing single impressions and ideas into relation to a relatively constant leading-idea, and in subordinating them to it. The function of the leading-idea is that of a "problem"; associations which

[1] A paper read before the Educational Science Section of the British Association at Sheffield, September 2nd, 1910.
[2] *Année Psychologique*, xiv., pp. 1–94, 1908.
[3] *Zeitschrift für angewandte Psychologie*, iv.

become actual are inhibited and suppressed until the problem is carried out.

Every intelligent person has, in the first place, a great stock of ideas; for otherwise he would not be able to put new ideas in the place of those already suppressed. Such a stock of ideas or experiences he can only have if his power of observation and memory is in perfect condition. Here we encounter a bond between intelligence and memory which is often *over*rated, and must certainly not be *under*rated. All methods for testing intelligence must take it into consideration, but they should not therefore be reduced to pure memory-tests. In any case, they must keep clear of school-knowledge, for otherwise one of the essential factors of intelligence, namely, great power of learning, would not be clearly visible in the result. We must know, in other words, whether the instructor was obliged to exert himself more or less while imparting knowledge to the pupil. An intelligence-test should, if possible, take into consideration and ask only for such knowledge as a normal child learns "by itself"; for instance, the names of the principal colours. On the other hand, of course, in knowledge which is *not* school knowledge, the home influence is an important factor. Here, therefore, we find a limit to the testing of intelligence. Only children of the same *milieu* on whom home influence seems to be relatively the same should be compared.

But the intelligent man, as I said, is not yet sufficiently characterised by saying that he only stores up experiences, or strings ideas together unmeaningly. His ideas should form a system by being brought into relation to certain leading-ideas.

Furthermore, we demand from an intelligent person a proper understanding of problems proposed by another. He must be able to give them at least temporary rank as leading-ideas in his own thinking.

Intelligence-tests, therefore, in so far as they are not mere memory-tests, must be able to show clearly whether the subject possesses both of the last-named qualities; I mean, whether he has or can form leading-ideas in his own mind, and if he understands problems proposed to him.

In our everyday life we ask even more from those whom we call "intelligent." They must be deep and critical. Experimental tests, however, must neglect these things, because results which would demonstrate superficiality or deficiency of criticism could also be attributed to a temporary inattentiveness. But depth and the power of self-criticism are just these qualities which are the conditions of a finer gradation of intelligence, especially in the higher direction. So we find here a second limit to methods of testing intelligence. They bring into evidence only relatively large or pathological differences, and are not adapted to the discovery of *super*normal ability. By these limitations the expectations that may be entertained for intelligence-tests are greatly diminished. But we should be satisfied in having in the method of Binet and Simon at least a scheme for ascertaining, first, which children are equal to the tests of elementary schools, and which are not, and must therefore be sent to a special school; and secondly, which of the children who are brought before a juvenile court should be exempt from punishment on account of a defective intelligence. From the investigations of Dr. Bobertag it would seem that the method is equal to both of these cases. Perhaps we shall find in time a method which will do justice to expectations at present unfulfilled.

The general plan of the intelligence-tests of Binet and Simon may be gathered from the preceding, I fancy. Every test consists in the making up of a scheme, that is, in founding a relation upon concrete determinations. For example, one of Binet and Simon's questions is: "What is the difference between a fly and a butterfly?" The scheme or the leading-idea is here "difference." The ideas of "fly" and of "butterfly" have to be subordinated to it. I will now give you some examples to show how from the various answers given we can infer the presence of different defects of intelligence. The answer "A fly has six legs, a butterfly only four," would merely show a defect of memory; on the other hand, such an answer as "The fly flies," shows that the difference problem has not been appreciated. Finally, such an answer as "The fly is dark, the butterfly light," would be superficial, and would show perhaps only inattentiveness. To obtain results such as these, the investigator must be able to express himself in a clear and precise manner, to understand the subject's style and manner of speech. The conditions of the investigation must be constant. If the text, the cadence of the question, or accompanying gestures are modified, or if at times the question is reiterated, the "problem" and its difficulty may change. In our definition of intelligence, emotional factors do not find a place. The intensity of emotions, or even that of suggestibility, do not form a standard of intelligence. All kinds of emotions and suggestions, therefore, must be disregarded in testing intelligence. It is not allowable to question in a suggestive manner, to disturb the subject by the cadence of the voice, or by questions which are too difficult, and the like.

It is not possible to avoid altogether such disturbing circumstances as momentary confusion and inattentiveness on the part of the subject, any more than in other psychological experiments. But for many years psychologists have made it the rule in experimenting to render such disturbances harmless by repeating the same experiment again and again. Only through repetition are results obtained which justify any inference regarding the mental faculties of the subject investigated. But there are a number of psychological questions of such a nature that they do not allow of a repetition of the same experiment, with the same subject. For this, however, we have a certain remedy which consists in applying the same experiment to *different* subjects, the psychophysical constitution of which may be considered

to be about the same. Such tests lead, of course, to results which characterise only the *whole* investigated class, but are not specifically valid for *each* of the subjects investigated—a fact which has not always been sufficiently considered by a number of investigators. Intelligence experiments do most certainly belong to the class of tests, but their practical importance lies precisely in the fact that we hope to obtain from them results bearing on the intelligence of the single subject. From this dilemma the line of escape which was steadily followed by Binet and Simon lies, not in requiring one and the same subject to repeat an achievement several times, but rather in obtaining from him a number of *different* achievements all bearing on the intelligence.

Theoretically the result of such an investigation will be more correct, the more single, different, individual experiments have been made; and the possibility of multiplying the single experiments is unlimited. But, practically, it is necessary to remain within certain bounds. Binet and Simon have found, I think, the proper mean; they give 119 questions, which may be classified into forty-five groups. But not all of these questions are directed to each subject. For instance, a child of nine begins with the problems which can just be accomplished by a normal child of nine. If these are done successfully, the questions for a child of ten follow, and so on; if they are *not*, the questions for an eight-year-old are put, and so on. The degree of intelligence of the subject is then calculated in the following manner: if a child of nine succeeds in at least five of the problems meant for a child of ten, it is said to be ahead of its fellows by one year. It is certainly an excellent idea to calculate the development of intelligence according to degrees of age; but naturally the manner of these calculations is not free from certain caprices.

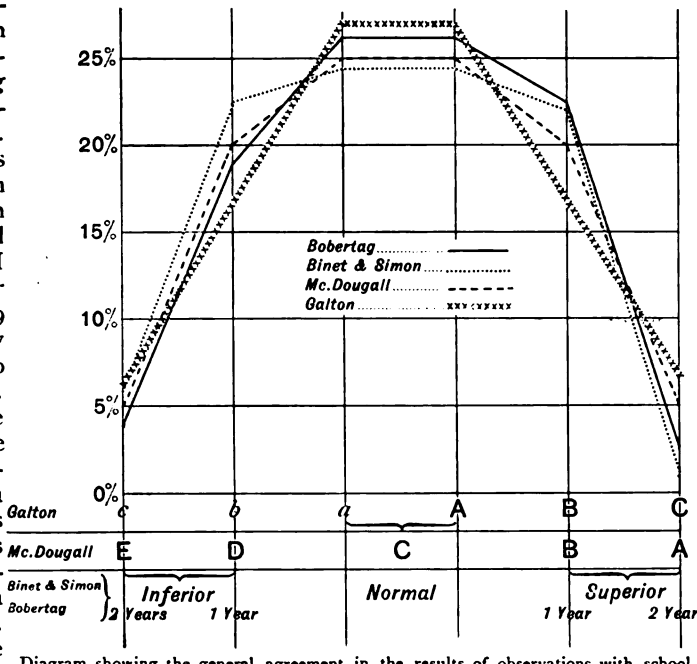

Diagram showing the general agreement in the results of observations with school children of mental intelligence made by several investigators.

Binet and Simon seem to have been fortunate in avoiding a great source of danger—onesidedness. We know that in certain feeble-minded subjects several partial functions of the intelligence, such as memory, or the ability to calculate, are developed to a high degree. No single one of these partial functions, therefore, should decide the result, or be totally neglected.

So we find that Binet and Simon test the power of observation, the stock of ideas, as well as testimony on the basis of perception, and of memory; the subject has also to name and to count things, to give æsthetic and other judgments of comparison, to define, to combine, to calculate, to write, and to read; the aptitude of the subject to operate with optical imagery of a special kind, to adjust himself to given or to imagined situations, as well as his power of criticism, and the like, are all tested.

It is clear that in all these things the older normal child is superior to the younger. But since age is, in this work, neither more nor less than the standard used to measure intelligence, such a general statement is not sufficient. We have still to determine exhaustively what tasks a normal child of six, seven, eight, &c., years may justly be expected to perform. That question is not only, as one might think, one which can be settled by mass experiments. Rather must a preliminary theoretical question first be answered—namely, what percentage, for instance, of nine-year-old children should have succeeded with a certain task?—before we may legitimately demand the accomplishment of that task from a *normal* child of nine years. Or, in other words, what percentage of children of the same age are normal, what percentage *super*normal, and what percentage *sub*normal?

Francis Galton[1] has distinguished sixteen degrees of natural ability, and supposes that in these degrees the distribution of people follows the law of Gauss and Quotelet. If we add to this the suggestion that individuals belonging to any of the five highest and of the five lowest classes probably do not appear in the elementary schools, we find a notable agreement, not only between the calculations of Galton and the results of Binet and Simon with 192 subjects; but also between these and the results of Bobertag with 261 subjects, the statistics made by Bobertag on the school certificates of 1,306 children, and the proposals made by Mr. McDougall and accepted by the Mental Measurements Committee.

I will not weary you with figures from all these

[1] "Hereditary Genius."

sources, but will show you the agreement by the diagram. A test which we may expect a normal child of nine years to stand must be within the power of the normal and of the supernormal individuals of that age; that means, 77 per cent. of normal nine-year-old children according to Galton, 75 per cent. according to McDougall, 71 per cent. according to Binet and Simon, 77 per cent. according to Bobertag, and 75 per cent. according to the statistics on school certificates.

An investigation such as the above is feasible only with children of a *milieu* as homogeneous as possible, and the statements just made are, of course, valid only for children of that *milieu*. How considerable the influence of the *milieu* of the home education is, is shown by the results of Bobertag. The children of the well-to-do seem, in fact, to be advanced about two years beyond the children of the proletariat. If, on the other hand, signs of a particularly well developed intelligence reveal themselves, we must remember that in many instances we shall have to do with a case of specially good influencing *milieu*. For these reasons we must conclude, as was previously suggested, that the method of Binet and Simon serves only to fix the boundary between normal cases on one side, and subnormal pathological cases on the other.

Although, as I said before, I am not discussing results, still I cannot omit to mention one specially interesting result of Bobertag's. Boys from seven to twelve years old showed greater intelligence than girls of the same age. According to the age scale the development of the boys is on the average two months in advance of that of the girls.

I have assumed familiarity with the main lines of the method of Binet and Simon, because it is hardly possible to bring them within the scope of a short paper such as this. I must refer for the further details to the original, and to a German elaboration of the same tests made by myself.[1] I might mention, also, a summary report by Bobertag,[2] and more especially the investigations of the same author, which will be published in autumn of this year in the *Zeitschrift für angewandte Psychologie und psychologische Sammelforschung*.

Finally, I should like to say that apart from their practical value for the estimation of intelligence, these experiments also provide the material for other very interesting investigations. For instance, first, whether correlations exist at all, and to what degree they exist between the several partial abilities investigated; and, secondly, in what rate these different abilities develop; whether their development is steady or spasmodic, and at what age development is most rapid, and so on. There is therefore in this wide field of research already much which may please and much which may attract and encourage the student.

[1] *Zeitschrift für angewandte Psychologie*, ii., pp. 534–544, 1909.
[2] *Zeitschrift für angewandte Psychologie*, iii., pp. 230–259, 1909.

A TRAINING COLLEGE UNDER CANVAS.[1]

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THE efficient training of teachers bristles with difficulties; improvements are necessarily slow and must follow the line of experiment. We soon discovered that technical lessons and continuous practice in school left certain elements out of account, and that, to venture into paradox, students were being really trained when school practice was not strongly in evidence. Visits to schools for observation were followed by excursions during a week in June to country districts. For seven years these visits have formed a popular and serious part of the course. During these expeditions the physical and social conditions of the district were noted, and schools (of a smaller type than those that students were accustomed to) were examined with the view of understanding their curricula and methods, and of determining how they were adapted to the needs of their locality. Chatton, Alnwick, and Haydon Bridge in Northumberland, and Ambleside and Keswick have been centres. The efficiency of the students as class teachers was undoubtedly improved by these excursions.

The training college is fortunate in its access to selected schools of the local authorities; but school practice does not cultivate close relations with scholars. Every observant head teacher notes the defect in certain assistants in that they do not seem to get near the scholars, that they cannot live with their class. Their relations are serious and honest, but they have a tendency to be formal, artificial, and schoolmastery. Considerations such as these led us to consider whether a scheme could be devised during part of the training, when more natural relationships might be cultivated and the errors of formalism be brought home. The gratifying rise in nature-teaching in our school was further an incentive to bring students and scholars into closer contact with nature. School camps and the general tendency for English people to live more in the open air probably turned our thoughts to a training-college camp.

Camps for boys have been successfully held, and their advantages have been demonstrated, but our problem is a different one. While it was evident that our experiment would throw light upon the conduct of open-air camps, we had to determine whether such camps would assist in the training of teachers; it is conceivable that a successful camp from the boys' point of view might be a failure as an annex to training-college work.

In the details of administration and organisation I received valuable aid from my colleague, Dr. Thomson. He entered upon the scheme with characteristic enthusiasm, and the success of the experiment is largely due to his administrative skill.

[1] From a paper read before the Educational Science Section of the British Association at Sheffield, September 6th, 1910.

There were difficulties to face. Many schools were in session, but the Board of Education allows attendances in camp to be credited to the schools, and H.M. inspector of training colleges recognised the time as part of the school practice period. We had no funds: the camp must therefore be self-supporting. It was not deemed advisable to appeal to education authorities in an initial experiment, lest conditions imposed might curtail our freedom; hence it was necessary that boys and students should pay a fee that would meet the estimated expenses. At Warkworth the fee for a fortnight, including train fare, was 25*s.* for students and 19*s.* for boys—this just met expenses; at Richmond we charged 27*s.* 6*d.* for students and 20*s.* for boys, and we were left with a substantial balance. The payment of the fee meant that only boys could join whose parents were fairly well off, but there is no reason to contemplate that any complications would ensue if we had recruited from boys of a poorer class.

The total number at Warkworth was 147. At Richmond there were 123 boys, 35 students, 3 ex-students, army cook and 2 boys, orderly clerk, 6 members of the staff; 171 in all.

The proportion of students to boys is large, but in a camp where there is no hired labour the staff must be numerically strong. Practically one-half are engaged each day on fatigue duty: food is to be served, dishes to be washed, latrines to be attended to; some are set apart for night guard duty, officers of the day, &c. The remaining half were conducting the instruction. We did not find in either camp that there were any unemployed.

Special demands were made upon the quartermasters and mess superintendents to cater economically and effectively for 171; to see meals served punctually, with sufficient for all and without waste, made great demands upon these special appointments; the work was first-rate; they worked morning, noon, and literally night. I should also record the great help we obtained from ex-students. Their wider experience steadied camp; they undertook the hardest work, and were content to give up their own holiday and pay camp 30*s.* for their services.

The equipment was obtained from the Ordnance Department, York, and we were indebted to the courtesy and kindness of the various officials. At Richmond we had 30 bell tents, 2 small marquees (medical tent and common-room tent), 150 sets of blankets, ground sheets and paillasse cases, Aldershot oven, together with pails, shovels, kettles, dishes, brooms, barrow, lamps, and other necessary details of camp equipment. The total cost was £27. We used the grand stand as a mess-room; otherwise a large marquee would be necessary, and would be better than a permanent building; this would increase our cost from £10 to £15.

We were fortunate at Richmond in camping near the Territorial forces, and were allowed to draw rations from the Army Service Corps. The presence of the Territorial camp was no drawback, and in many ways it was a benefit. To summarise cost, I may say that food and fuel cost 8½*d.* for each person per diem; camp equipment, 3¼*d.*; carting, wages, scavenging, rent of field, and sundries, 3½*d.* per day. Further, there was the cost for railway fares and other incidental expenses.

The food supplied was ample and was excellent in quality. A typical day's menu was:

8 a.m. Breakfast. Porridge with milk and sugar. Tea, bread and butter.

1 p.m. Dinner. Stew-beef and onions, potatoes. Currant pudding. (Roast beef and rice pudding on alternate days.)

4.30 p.m. Tea. Tea, bread and butter and jam; lettuce. Cake on alternate days.

8 p.m. Supper. Coffee and biscuits.

The best testimony is that the average increase in weight among the boys during the fortnight was almost exactly 2 lbs.

These statistical details give no knowledge of the foresight, labour, and organisation needed of the executive officer, nor have I entered into the consideration of advance party and rear party; tents and stores are to be received, placed in position and returned, and much of the comfort of camp was due to the hard work of the fatigue parties. The details of organisation and instructions to orderlies are given later; they represent the hidden work so essential to the well-being of a camp.

The selection of a site is of primary importance. Warkworth, with its association, its admirable camping ground on the links, and the long stretch of hard sand for bathing, was excellent, but the water supply was defective. Richmond racecourse was in a position of great natural beauty; the water supply was ample, but it was too far from camp.

The instructions to students are embodied in the following paper issued to them before camp began:

The camp is a new experiment in your training; the end is systematic work that will, I am sure, include real pleasure. It is a substitute for school practice, and can only be justified if it contributes to your knowledge of teaching.

The work must be serious, and seeing that books obviously cannot be used by the boys, the responsibility of preparation will be greater than it is in school. Attempts have been made to divide the work so as to utilise the special knowledge students possess, but a general interest must be shown in all subjects. While boys have no books, it will be quite sensible for students to provide single copies of books that the boys can use for reference. Your knowledge of special subjects should be full. Let all the teaching be "real"; do not be overpowered by formalism. Discuss how the plans followed can be utilised in ordinary school work.

The boys are of varying ages, but this will present no serious difficulty; it will probably be found that advantages will be discovered.

You can be of special service in aiding the boys to write their notes; remember the values of good arrangement, good sketches, use of colour, &c.

You will write a report upon the work of the fortnight; examine carefully the possibilities of such experiments.

Could they be extended to, say, three months? Each should also note the effect of the lessons of his fellows, make suggestions, and discuss with them alternative methods.

The most important part of the experiment will be your relations with the boys: how far can such relations apply to ordinary school work? For a fortnight we are responsible for the religious and moral training, the health, and the instruction of the boys in a sense that is not implied in an ordinary school course. Be observant of any indications of indifferent health.

Apart from instruction, I hope we shall all try to interest the boys, the interest that comes from informal talks; boys are capital listeners when the talk is worth listening to; anything that you can read and relate will be of value.

It is so obvious that I scarcely need mention it, that there must be no smoking in camp until "lights out" has been sounded for the boys.

I believe that the experiment is good in an educational sense, but we can only decide upon this at the close.

Scholars were drawn from some thirty schools; the ages varied from twelve to sixteen; the average age was thirteen. We had to determine a classification and curriculum under unusual conditions, and we finally settled that we would disregard age, and construct a curriculum under the idea of "Northumbria," with special application to Warkworth, and that we would include such outdoor studies as were practicable; a similar course was mapped out for Richmond. Events showed that we were justified in omitting any consideration of age; all the boys had got over the mechanical difficulties of learning. The written work done in afternoon school showed variation in quality, but the variation did not seem to follow either age or classification in school standards. This is important, and suggests greater freedom in classification in schools as regards "new knowledge stuff" than as a rule we are prepared to venture upon. Such freedom is imperative in small country schools by force of circumstances, but it seems to admit of an application to large schools.

The absence of text-books was beneficial. The life of camp is too exhilarating for contemplative reading; outdoor people are not bookworms. In addition, the campers, staff students, and boys had all probably read more books during the preceding twelve months than was good for them. We propose, however, to increase our stock of reference books.

It may be useful to give the general time-tables for a day:

6.45.	Reveille.
7.0.	Washing parade, preparation for last inspection.
8.0.	Breakfast.
9.0.	Service
9.15.	Tent inspection and departure for work.
1.0.	Dinner.
2.30–4.	School.
4.30.	Tea.
	Games.
8.15.	Supper.
9.15.	Boys' lights out.
9.30.	Students' discussion.
11.0.	Students' lights out.

A typist and a duplicating apparatus contributed to the efficiency of camp; orders for the day and general instructions were issued formally, and a camp journal that sold rapidly was published at intervals.

A tent (some six or seven boys) was the unit for teaching; frequently two or three tents were grouped together.

Two students were in charge of each tent, one being on fatigue duty each day, while the other attended to instruction. A prefect was also appointed from among the boys; one boy from each tent acted daily on fatigue duty.

The subjects for study were:

Surveying areas and a field.
Mapping by plane tabling.
Physical geography of the district, Weatherton.
History connected with Richmond and Easby Abbey, &c.
Natural history of plants and animals.
Sketching in all sections, and music.

The surveying and plane tabling were a kind of mathematical core and were quite popular. To survey and calculate the area of a real field with the chain and poles of a grown-up surveyor had in it genuine satisfaction, and to map out the district round camp and to find after a few days' work that the result was nearly as good as (if not better than) the ordnance map never failed to yield pleasure.

Lessons, if we may name them as such, occupied the morning. At 9.15 the various sections marched out of camp under two more students; some to the castle, others further afield to Easby Abbey; a batch to work with the plane table; a section to examine the river and its action; some to find what a pond contained of interest, or what wonders there were in a hedge.

The sections returned about 12.30 for dinner at 1, and spent one and a half hours during the afternoon in writing an account of the morning adventures; then followed rest or games, and the period after tea was left free for further games, arranging competitions between tents in football, cricket, or tug of war; some period was devoted to music.

The natural history section recorded 106 species of plants and 41 among animals, and the boys were fairly familiar with all at the end of camp. No tent covered the complete curriculum. The aim was not so much to teach a period of history as to stimulate history by reference to local buildings and local incidents. Arithmetic was not extended so far as new rules were concerned; it was given a fuller meaning by application to surveying and plane tabling.

An examination of the exercises written by the boys (and prompting and coaching, be it noted, were deprecated) does not suggest that the lessons suffered from the loss of formal and persistent revision. The stimulating conditions and the dealing with realities made wearisome repetition unnecessary.

The general results of afternoon school were satisfactory; it was difficult at first to prevent the students from giving too much assistance: they

were plagued with a methodical school conscience that looked forward to neat exercise books and fine drawings. These count, of course, but they are overdone, and individual expression on the part of pupils is essential. Students were instructed to answer questions, to make suggestions if necessary, and to remedy defects after the exercises were written, or during the next excursion. There was among the boys a weakness in power of expression, and camp discovered a definite weakness in drawing. The new methods of the Board of Education, ever changing in principle, do not seem to have developed any general ability for expressive drawing; the later products are not better equipped than the products of the old-fashioned ways. There was a general inability to deal with things at a distance, which suggested that the class-room methods, and especially the development of the plan of children drawing objects placed on their desk, has in it elements of mischief. Camp generally tended to draw and look at near objects; we seem to be in danger of physical and intellectual myopia. Few noticed, for example, the formation of the Pennine range silhouetted against the sky with the steep front and the long gentle slope of the strata repeated again and again. Open-air teaching may give to teacher and scholar a new meaning to "I will lift up mine eyes unto the hills."

Of discipline I have nothing practically to say; in neither camp had we any difficulties. At Richmond no boy was even seriously reprimanded; tidiness of tent and promptness in carrying out instructions were insisted upon, but everyone loyally did his best willingly. Students all record as noteworthy that with the free relationships healthy discipline improved. One clear result was that boys were able to do everything for themselves; there was the keenest competition at tent inspection, and the sight of the lines each morning with tent after tent in prim and accurate array was almost sufficient reward for the trouble of preparing for camp. In these days, when it seems that mothers, wives, and sisters will no longer act as unnecessary drudges to the male part of the family, camp life seems a suggestive preparation. Our success was largely due to the elements of strenuous work and insistent attention to small things; it was a delightfully tired camp that went to rest each night.

The staff saw only a small proportion of the lessons; this was not a serious defect. Over-supervision in student training is often overdone; in camp it is unnecessary. We saw the squad march out and come back, saw the results in school, saw the student in relation to his squad, heard him once or twice during the fortnight, and were able to sum him up better perhaps than if he had been overshadowed—it was a fortnight for freedom and responsibility. On occasions there were frank consultations with students, when they themselves were their keenest critics; they brought forward their difficulties in a way that they would not have done under any system of rigorous supervision. It should be remembered that as a rule one of the students, at least, with each squad had a good knowledge of his work, and there was distinct evidence that they derived mutual benefit from the work of each other.

Informal discussions were introduced after supper. Boys' lights were out; students were content in body; the restriction of the pipe was withdrawn, and pedagogy flourished under congenial conditions. There was a general opinion as to the value of these talks; students were most alert, more communicative, and keener in defending their position than is usual in the college discussion.

Singing was better at Richmond than it had been at Warkworth; this was due to better preparation. The "Lass of Richmond Hill, "The Wagoner," and "The Bucks a-hunting go," local songs of merit, were taught and were enjoyed by all; they served as marching songs for the sections, and were sung and whistled all over camp. It is only by substituting the tuneful, healthy songs of England that we shall displace the inanities of the passing hour.

The effect upon the health of the boys was unmistakable. The abnormal good health was noted by the medical officers. Most striking was the glow on the faces, and the bronzed appearance of the campers seen by comparison when the parents, brothers, and sisters visited camp. There was also a general improvement in tidiness, smartness, and respect for the amenities of social life. The health was excellent; those accustomed to the comforts and care of a home slept under canvas with only a waterproof sheet separating them from the grass; they got up, dressed, washed, and lived in the open air, survived drenching rains, and no one was a penny the worse. It seems doubtful whether you can catch cold in camp.

My colleague, Dr. Thomson, sums up the effect on the students:

The primary object of camp is to give students an opportunity of coming into close contact with boys, of getting away from the formal routine of large classes, of accepting a responsibility greater than can be theirs in a practising school, where the class teacher is near at hand to assist, and this object is without doubt attained in a very full degree. And just as boys and students learn to know each other, so students and staff enter into relationships which cannot be gained during term time.

The opinions formed about men before camp are invariably modified. It is a pleasure to be able to say that in the great majority of cases the change is for the better. The student who was in danger of being misunderstood at college turns out to be a force for good; the "third class" on academic lists proves to be a leader with the invaluable knack of getting the maximum of work out of boys or men who are placed under him. On the other hand, the thoughtful student finds he can learn much from him who is perhaps less

thoughtful but who is rapid in decision and energetic in putting decisions into action. Camp acts as a tonic to all, and there is an uplifting of *moral* and a general recognition of the necessity of pulling all together. No part of a student's career gives the college tutors such an opportunity of correcting their ideas as to his capabilities and possibilities. It is perhaps not too much to hope that the staff also are better understood by the men, who see them under conditions so different from the cap and gown atmosphere of the lecture room, or the equally formal (if stuffier) atmosphere of the private room at school.

A hope cherished by the promoters of camp is that the directness of the teaching may in some measure be carried into the school teaching of those who have been at camp, and, above all, that the love of open air may give rise to school excursions and even to "school camp" in imitation (probably, of course, on a smaller scale) of our own camps at Warkworth and Richmond.

There can be no question that the general efficiency of the students was distinctly improved by the experiment. They will be more alert, more receptive, more humane. They will understand, appreciate, and respect boy nature better. They will see greater possibilities in teaching, and will be more daring in venturing on new experiments. They will be more competent class teachers for our schools. Form and matter for instruction will be seen in due perspective, but will not overpower reality. Health, physique, and the humane influences will be less in danger of being sacrificed to mere instruction, seeing that students have lived for a fortnight in such close companionship with boys. It is but just that we should thank them for their loyalty, earnestness, and the interest they showed in their work, even if we expose joints in their armour.

To the staff, camp experience was of the greatest importance. It enabled them to appraise the values of the students with greater confidence than their ordinary intercourse in college allows. Students who had not impressed us by their studies nor their school practice displayed interests and activities that we had failed to recognise, and distinctly contributed towards the success of camp. They were often eminently successful with their group of boys. On the other hand, we discovered cases in which success in the lecture room and laboratory, nimble criticisms of lessons, and even clear exposition in front of a class had misled us; such students were lost for a time, divorced from the artificial conditions of the classroom. Most interesting was the study of those who were always trustworthy, always willing for work, however undignified it might appear, and of the exceptions who assiduously pursued work they never seemed to find.

For myself I have no reservations as to the value of the camp.

Community in life and interests was developed, interdependence on each other was taught, views were widened, body and soul were braced; we left camp better for our fortnight's sojourn; it stimulated us in college and school; our knowledge of the world and life was elevated by reason of the

> Great days in the distance enchanted,
> Days of fresh air in the rain and sun.

THE NEW REGULATIONS FOR TECHNICAL SCHOOLS.[1]

By J. WILSON, M.Sc.
President of the Association of Teachers in Technical Institutions.

DURING the last decade, the principal advance in English education has been the foundation of a national system of secondary education. There are many signs that the next decade will be marked by important developments in industrial and technical education, for which the general improvement of elementary and secondary education has paved the way. Public opinion is awakening to the necessity for extending the present system of technical education, not only as a means of furthering the commercial prosperity of the nation, but also as a possible agency for lessening the evils of unemployment by diminishing the number of "unemployables." Numerous valuable experiments are now being made by many public authorities and private agencies, especially in the preliminary stages of technical instruction. Thus we have the "preparatory trade" or "pre-apprenticeship" schools at Leeds, the newly established "central" schools (*i.e.*, higher elementary schools with a technical "bias") in London and Manchester, and the trades schools proper, such as those at the Borough Polytechnic, the Shoreditch Technical School, and the Stanley Trades School at Norwood. Considerable progress is also being made in the higher stages of technical education. The technical schools are everywhere extending their courses of instruction, their buildings and equipment, and are rapidly pressing forward into more and more advanced work in pure science and technology. The modern universities have all established strong technical faculties, and efforts are now being made to develop at South Kensington an Imperial College of Science and Technology which shall be the central technical institution of the nation and the Empire.

The present is thus a period of rapid development in technical education. A number of problems are now demanding earnest consideration. Amongst the more pressing are such questions as: (*a*) the correlation of the work of the elementary and secondary schools with that of the day and evening technical schools, (*b*) the provision of "technical-secondary" schools, (*c*) the better linking of the evening continuation school to the evening technical school, (*d*) the co-ordination of the work of the technical schools with

[1] Board of Education—Regulations for Technical Schools, Schools of Art, and other forms of provision of further education in England and Wales (in force from August 1st, 1910). Part i. Grant Regulations. [Cd. 5329.] (Wyman and Sons.) 2*d*.

each other and with the local university colleges, (*e*) the relationship of the Imperial College of Science and Technology to the technical institutions.

Technical education as we know it in England to-day has grown up haphazard, largely by a process of gradual evolution from the evening classes fostered by the old Science and Art Department and the City and Guilds of London Institute. The future development depends to a considerable extent upon the Board of Education, through its control over the allocation of the Parliamentary grants made, not only to the technical institutions proper, but also to the universities. The recently issued regulations of the Board relating to the grants of 1910–11 will therefore be carefully studied by those interested in technical education as indicating to some extent the future policy of the Board.

As with so many other regulations which have been issued of recent years from the Board of Education, the most suggestive and valuable section is the prefatory memorandum, which foreshadows broad, far-reaching changes in the immediate future. Apart from the increased grants for day technical work, the new regulations themselves do not present any very special features of interest. The following may perhaps be noted.

(*a*) Article 11 (*b*) states: "If it is desired to charge no fees in any school or group of schools, the proposals submitted for the Board's approval must show why this is thought desirable." From this one would infer that the influence of the Board will be directed against free admission and in favour of charging fees for day and evening technical classes. On this point experience shows that the present low scale of fees for attendance at evening classes is not to any serious extent a deterrent to the average student. Most teachers will agree that the payment of a fee, however small, diminishes the number of "casual" entries, and acts as a stimulus to regular attendance. If, in the near future, attendance at evening continuation schools (now often "junior" technical schools) be made compulsory (subject to a "local option" clause) as appears not improbable, then such schools will almost certainly become "free." "Compulsory" education speedily involves "free" education. In view of the increasingly close connection between the evening continuation schools and the technical schools, it is therefore difficult to understand why, at this relatively late hour, the Board desires to lay emphasis on the necessity for charging fees in the latter.

(*b*) Article 38 (*a*) states that "no student may be admitted to the course (*i.e.*, in day technical institutions) unless either (1) he has been educated for at least three years, subsequent to the age of twelve in a school or schools on the list of secondary schools recognised by the Board of Education as efficient; or (2) he is over sixteen years of age, and is qualified, from his general education, to profit by a course of advanced instruction." In the first section of the above regulation, the Board clearly insists that attendance at day technical courses shall only be open, as a rule, to those students who have received a good previous general education such as would presumably be secured by at least three years' attendance at a recognised efficient secondary school. Perhaps in time, the possession of a "secondary-school leaving certificate," granted jointly by the school authorities and the Board of Education, may be a further necessary condition of entrance to the day technical schools. At present the educational qualifications for entrance to day technical courses are not infrequently somewhat low.

There is another point arising out of this regulation. Will the newly established "central" schools, such as those in London and Manchester, be recognised for the purposes of section (1) or (2), *i.e.*, if a boy leaves one of these schools at fifteen and a half or sixteen years of age and is desirous of continuing his studies at a technical school, would the Board regard his previous training as adequate? It cannot be too strongly insisted upon that the organisation and curricula of these "central" schools, which will probably be established also in numerous other large towns, shall be such that the most capable boys (and girls) shall pass automatically to the technical institutions at about sixteen years of age. These schools should provide another road to the technical schools, in addition to the route *via* the ordinary secondary school.

Turning now to the prefatory memorandum, we note that the Board states it "hopes to issue, before the end of 1910, a body of new regulations which will come into force on August 1st, 1911." The following important changes are foreshadowed in the memorandum:

(1) More adequate provision will be made for the co-ordination of continuation schools by the local education authorities.

(2) The grouping of subjects into organised courses.

(3) The improvement of the attendance of students "without which little further progress is likely to be made."

(4) Provision for the special needs of agricultural institutes.

(5) Organised day continuation schools for boys and girls leaving the elementary schools, and needing a course of further education related to the requirements of their future occupations.

(6) Simpler means for allocating grants payable under the regulations of the Board of Education to institutions of university rank, and for co-ordinating these grants with those paid to the same institutions by the Treasury.

(7) Certain changes as regards the Science and Art examinations, the National Competition, and the awards to students.

The announcement that the Board proposes to deal with the above at an early date is exceedingly welcome, and the publication of the detailed regulations relating thereto will be awaited with much interest. Numbers (1) and (5) deal specifically with the continuation schools. We note

the omission of any definite suggestion, as yet, for compulsory attendance at day or evening continuation schools. Apparently the Board is not yet prepared to recommend a provision similar to that contained in a recent Scotch Education Act, giving local education authorities power to make such attendance compulsory. Number (1) presumably involves the co-ordination of the continuation school with the technical school. Here, as is well known, much has been done of recent years, especially in Lancashire and Yorkshire. In this, London is relatively backward, owing to the inherent complexity of all London educational problems. It is to be hoped that the Board will take steps to ensure that the evening continuation school work throughout the country shall be treated seriously from an educational point of view, and that it shall be regarded as a definite (though temporary) portion of the national educational system. This involves a consideration of the teaching staff employed. It is very doubtful if the best educational results can possibly be achieved, when, as at present, a large proportion of the staff are men and women who, after an exhausting day's work in the elementary schools, endeavour to teach for two or three hours a night in continuation schools for two or three evenings a week. Continuation school work probably demands a more highly specialised class of teacher than is at present available. If the continuation school is to be closely linked to the technical school, there must be more definite provision for preliminary instruction in technical subjects, given, if possible, by technically trained men.

The second point, namely, the grouping of subjects into organised courses, is one in which there has been considerable progress in recent years, resulting in more thorough work, better attendance, and a general educational improvement. At the same time, there is a feeling among employers and students in some quarters that the "course systems," as actually worked in some institutions, have been overloaded with unnecessary cognate subjects, thereby wasting a considerable portion of the evening student's already very limited time.

With respect to the improvement of the attendance of students, although this is highly desirable, it is very doubtful if the statement that "without this, little further progress is likely to be made," can be accepted. The low average percentage attendance at evening classes is due to such causes as the following: (1) working "overtime"; (2) ill health; (3) a certain number of students after joining a class only attend two or three times; and (4) "slackness" of students. The attendance between Easter and the May examinations is generally most unsatisfactory, so much so that it would probably be worth careful consideration by the Board as to whether or not evening classes as a rule should cease at Easter. So long as attendance at evening technical classes is voluntary, it is probable that even with the most systematic oversight of the attendance of students by the school authorities, the percentage attendance could only be increased, say, 15 or 20 per cent. above the present figure.

The sixth point opens up the question of the relationship of the technical institutions to the universities. At the present time the universities, under the heavy pressure of their financial needs, are endeavouring to secure larger State grants, partly on the ground of the importance of their technical faculties to the industries of the nation. State grants imply an increased measure of State control; hence university education will probably come more and more within the purview of the State, acting through the Board of Education. This will facilitate what is now urgently needed, the organisation of technical education (especially in its higher branches) on a national basis. At present, in a large town, we may have the local university and the municipal technical school duplicating courses of instruction and equipment, &c. Apparently the broad line of demarcation between the two is: the main function of the technical school should be teaching, that of the university, research. These cannot, of course, be rigidly separated, nor is it desirable educationally that they should.

In the prefatory memorandum the Board, not for the first time, states it has under consideration certain changes as regards the Science and Art examinations, the National Competition, and the awards to students. It is generally understood that the Board desires to simplify its elaborate series of examinations at the earliest possible date. The most practicable policy at the present time would appear to be that elementary or first-year examinations should be conducted by the local authorities or unions of local authorities, acting in conjunction with the teachers, while advanced or honours examinations should be controlled as heretofore by the Board, pending such time as these examinations also can be handed over to the local authorities, the Board acting as outside "assessors" or "moderators," to ensure a uniform standard throughout the country. Under the present conditions one is sometimes tempted to think that in many cases technical classes are judged, not by their beneficial effect upon the local industries, but by the number of "passes" at an external examination. It is to be hoped that, assuming the present examination system continues for some time longer, the Board is also seriously considering the amalgamation of its examinations with those of the City and Guilds Institute. Another matter upon which action by the Board is highly desirable is the revision of the conditions of the award of the Whitworth scholarships and exhibitions, so that these shall be brought into harmony with the wishes of the founder, and the modern developments of engineering education.

A curious but characteristic feature of the Board of Education appears in the prefatory memorandum. After stating the intention of the Board to deal with such fundamental problems as those to which attention has just been directed, the next paragraph of the report gravely points

out that in future the attendance of students must be recorded in registers "supplied by the Board." Apparently uniformity of registers is of approximately the same order of importance to the Board as the remodelling of the whole system of technical education.

THE HOME AND EDUCATION CONGRESS AT BRUSSELS.

By Emily E. Kyle, B.A.
Hon. Sec. of the International Home Education Congress.

IT seems that many interested in education in England have been misled by the title of the congress held in Brussels at the end of August into thinking that for the practical teacher there would be little of value, and it may be well perhaps at the outset to say a few words as to the origin and intention of these congresses, which have been held every three years, beginning in 1905, at Liège, then in Milan, and Brussels. It was felt that all social amelioration must really begin with the home, and that parents quite as much as teachers and administrators must understand the theories which underlie all improvements in educational methods, of whatever sort, if these were to be rapidly popularised and enforced.

So the Belgian Government gave its patronage to the efforts made in order to assemble together at Liège in 1905 as many of the general public as possible for the discussion of all sorts of problems bearing on child study, school life, adolescence, and abnormal children. Such was the success of this congress that a permanent commission was formed, and at the congress just held over 3,000 people were members, eighteen Governments were officially represented, and nearly 300 papers were contributed by experts from the principal civilised countries.

Of these papers, twenty-two were contributed by British writers, and were remarked upon as being of a very high degree of excellence, so that though the English delegates were not exactly proud of the linguistic abilities of their fellow-countrymen, they were glad to feel that in originality and serious study the British papers in no way came behind those of other nations.

The syllabus of the subjects to be discussed by the congress was divided into eight sections: child study or pedology; general questions; education before the school age; education during school age; education after school age; abnormal children; various efforts to improve the life and environment of children; and documentation connected with child life. The papers contributed to each section were bound up in one volume with a *résumé* in French of each, and were taken as read at the congress and discussed. Four sections met simultaneously morning and afternoon, so that no one could attend discussions in all sections without missing a good deal in the section that happened to be one of particular interest to him. We noticed that the practical teachers mostly attended the discussions of the second and fourth sections, and specialists sections 1, 6, and 7; while the parents, who were there in great numbers from France, Belgium, and Germany, attended most of the sections impartially, though preferring, 2, 3, 4, and 5.

Reading the papers and listening to many discussions in sections 2 and 4, and reading and hearing reports of those in other sections too—in which at least five nations, including Roumania, took part—made three facts of value to the practical teacher become very clear. These were, first, that more and more it is becoming felt and recognised that education is to be chiefly a training of character, and, further, that this character is not to be that of a mere scholar immersed in books of theories, nor that of a selfish commercial-minded man bent on the advancement in material prosperity of himself and family, but the character to be formed is that of a versatile citizen, with a strong sense of public duties, and of duties to his children, and a power of realising his ideals and of making them clear to others.

Secondly, it became clear that it was felt that education had too long been merely literary and unpractical, and much stress was laid on education by manual work in all stages of the curriculum. One speaker even went so far as to insist that the core of the curriculum in all stages, even the university stage, should be manual work, and that all the other subjects should be correlated with this; and it was evident from nearly all the speeches that Froebel's views on education should, in the opinion of the many educators present, be acted upon, not merely in the infant school and kindergarten, but throughout the school course.

Thirdly, it was almost startling to realise from the many speeches in more than one section on the subject how unanimous the different writers and speakers were in attributing most of our social evils to the insufficient and badly conceived curricula of our girls' schools. Again and again in the papers and in the speeches was a readjustment of the present girls' curricula demanded; paper after paper and speaker after speaker insisted on the science in the girls' case being treated largely with a view to its application to the household arts and cookery, and that these latter should be taught in the later years of school life practically as well as theoretically, and with reference to the future position of the particular child. Almost every speaker asked for some training in the care and rearing of children, and very many—especially the Dutch writers—insisted on some knowledge of sex questions being given to the girl in school.

It was very interesting during these discussions to compare the different points of view from which different classes of speakers approached the question. The Belgians and most of the French speakers, including the women, regarded the education of the girl child almost altogether from the man's point of view—she was to make *his* home comfortable, she was to have "charme" for *him*; she was not regarded so much as a being, who would best develop her own individuality and

gifts by the study of subjects which, through the ages, have come to be particularly associated with the *rôle* woman plays in the social life, but as an adjunct of the man to whose development she would minister. The Italian and German speakers, however, and the writers of the English papers on the subject were careful to insist that they demanded this instruction, not merely for the benefit of society at large, but chiefly for the enriching of the woman's own life, and many of these pointed out that it was highly desirable that in a boy's education the fact of his possible fatherhood should not be forgotten.

Much, I believe, was said on this point in the discussion on co-education which arose in connection with a subject entitled "Preparation of those who are betrothed for married life" in another section, which, unfortunately, I could not hear. The Dutch members of the conference were, so far as I could gather, strongly in favour of co-education. Both America and England (Lady Rücker) contributed papers pointing out the efforts that were being made in these countries to give home science and economics in university courses for those women who were able to pursue their studies after secondary-school life.

In connection with the training of character much stress was laid on games, chiefly by the non-English writers, as might be expected, and several speakers referred to the games in English girls' schools, and pointed out that used with sense and moderation they were of great use in developing the very qualities in which the female character is apt to be deficient; there was some timidity, however, not scientific, on the subject of cricket and hockey for girls. Many of the Belgian convent boarding schools really only allow free exercise worthy of the name on two days in the week, though drill is given on other days.

Mrs. Bryant gave very valuable hints in her paper as to the possibility of securing more time in school for the systematic training of character; and Mr. Marvin's paper on manual work contains in short scope the gist of nearly all that was said on manual work and also on the training of character; as might be expected, the discussions on these two subjects were somewhat similar, and, as a practical teacher, one came away convinced that the majority of the educators of Europe are of opinion that we now have to apply ourselves in our schools to securing an education which, while more practical and requiring more use of the limbs, will yet make more complete citizens; for it will realise that, after all, character is the result of many acts, which, in their turn, are the crystallisation of thought.

Members of the congress had the opportunity of visiting a large number of educational institutions, not the least interesting of which was the Institution of the Sisters of the Immaculate Conception and the Sacred Heart at Héverlé, where there are complete courses preparing girls for commercial, domestic, and agricultural life, and teachers for Froebelian, elementary, and secondary schools all under the same roof. The agricultural course was most carefully thought out and complete, and lasts three years, the third year including agricultural chemistry, bacteriology, and botany. So practical was this course that in the dairy department at least twenty kinds of separators were used, so that on any farm, well or poorly equipped, the pupil would not, in future, find herself at a loss. This institution was so extremely interesting, and its housewifery courses were so complete and sensible, that I should like to write more about it did not space forbid; and one cannot help thinking that, had we such an inexpensive and practical agricultural and horticultural course in England, some of the difficulties connected with the return to the land question might be solved.

EDUCATION AT THE BRITISH ASSOCIATION.

By J. W. Iliffe, M.A.
Principal of the Central Secondary School, Sheffield.

THE British Association for the second time in eighty years met at Sheffield, from August 31st to September 7th last. The president, Dr. Bonney, lightly bearing his load of seventy-seven years, gave an address of remarkable vigour, which may serve as an example to men of science apt to come to hasty conclusions. Section L, as the Educational Science Section is called, met with Dr. H. A. Miers, principal of London University, as president. The main subject of his address—which was printed in The School World, September, 1910, p. 341—was the relations which should be established between school and university—first between teacher and pupil in school, and next, the change which occurs in these relations when the pupil proceeds to the university.

The address so much commended itself to the section that a committee was formed to report on the relations between school and university at the meeting to be held next year at Portsmouth. If the committee should be able to make suggestions such as will result in a settling of the examination muddle, the address will have served a useful purpose.

On Tuesday afternoon, September 6th, Dr. Miers, in company with the president of the Association and eleven other eminent men of science, received the honorary degree of D.Sc. from the University of Sheffield, which also conferred the Hon. LL.D. upon the Lord Mayor, Earl Fitzwilliam.

Visits to works to inspect the typical industries, and excursions to the Derwent Valley waterworks, and to some of the very beautiful scenery and houses in the vicinity, were all interesting. The members of Section L had an excursion of their own on Thursday, led by Mr. A. J. Arnold, to the open-air school at Whiteley Wood, the open-air work at Ranmoor School, afterwards described by Mr. Feasey, and to Hunter's Bar School.

On Friday Section L met in common with

Section H (Anthropology), and the attendance proved larger than the room could conveniently hold. The occasion was the joint discussion of "Research in Education." It is sometimes urged by members of the Association that Section L has no claim to recognition, that there is no science of education, and that therefore educationists as such have no standing at the meetings. If such cavillers had been present at this combined meeting they would have been bound to admit that there is at least such a thing as the scientific investigation of the problems of education, and that, if teachers need not be trained in abstract psychology, it is highly desirable that psychologists and teachers should work together in settling the principles of a real psycho-pedagogy.

The report of the Committee on Mental and Physical Factors involved in Education was presented by Profs. Green and Findlay. The former showed how much more is being done in this direction abroad than at home. But more is accomplished in England than had been realised, though without any State financial support and with altogether inadequate resources. Both professors advocated the State endowment of this research. The report claims that mental behaviour does not lie outside the reach of exact objective methods of inquiry, and that, probably, mental phenomena are as obedient to law as the things of the material world. This very interesting report concludes by suggesting that other aspects of the educational problem—the sociological, the ethical, as well as the psychological—must be remembered, and that much may be learned from a study of the methods of the worker in experimental pedagogy, even if we are slow to accept his conclusions. Typical problems for research are appended for use by teacher-experimenters, and in connection with this the warnings of Dr. C. S. Myers against the "pitfalls of mental tests," in which he pointed out the comparative uselessness of statistics relating to intelligence, especially if compiled by amateurs, seem particularly well-timed.

Unfortunately very few copies of the report were available for distribution, and so the discussion was limited. It would be well for the section to guard against a repetition of this error. Prof. R. A. Gregory referred to the practical teacher's distrust of research, only to deprecate this attitude, and urged the great value of such research in helping the determination of the proper amount and kind of work in a school curriculum. Dr. Lucy Ernst having alluded to the difficulties put by English teachers in the way of researchers, the report was received, and the meeting passed to the excellent suggestions of Dr. T. P. Nunn for making children see that algebraic symbols and operations are necessary, convenient, and even inevitable. Algebra under Dr. Nunn must be usually a fascinating lesson. Dr. Spearman, speaking on "Individual Variations of Memory," gave some striking results from a number of cases of both children and adults. The methods of research were described, and the connection of memory with scholastic ability, as well as variations through age and sex, discussed.

After Dr. Lipmann's paper, "The Examination of Intelligence in Children," giving the methods employed by Binet, Bobertag, McDougall, and Galton, and another by Mr. C. Burt on experimental tests on general intelligence carried out at Oxford and Liverpool, the meeting adjourned. In the afternoon other interesting papers were read by Mr. J. Gray on "Perseveration," by Mr. H. S. Lawson on "Experiments in Intelligence," by Miss Johnston, showing the results of applying Binet's tests for intelligence to 200 Sheffield children, and by Prof. Meumann on "Tests for Intelligence." A discussion followed, begun by Dr. C. S. Myers with his paper on "Pitfalls of Mental Tests." He was followed by Dr. Rivers, who mentioned the need of a test for defective intelligence which could be used by school medical officers. He raised the question of how far examinations test intelligence, and congratulated teachers upon taking up the work of investigating mental tests, where advance has so far been on the scientific rather than on the practical side. Miss Cooper, of Oxford, speaking as a teacher, regarded the occasion as epoch-making, and welcomed the relationship now established between the psychologist and the practical teacher.

During the morning discussion the proceedings were enlivened by the visit of Sir George Reid, High Commissioner for Australia, who accepted the invitation of the president to speak. Sir George, in a human and humorous speech, made several good points. He implored the men of science who had been making play with technical terms to follow the example of Shakespeare in describing the most complex life truths in the simplest possible words. He noticed that the chief mental attitude of a child is curiosity and the wish to learn, and asked why the child should regard school as a prison, and should find his mental digestion all out of order. The mental indigestion, he declared, comes from the teaching being given as if it were "walnuts with the shells on," and he deprecated over-reliance on the memory in learning, comparing a child so taught to a gramophone.

On Monday the first paper was read by Mr. J. G. Legge, Director of Education for Liverpool, on "Handicraft and Elementary Science in Elementary Schools." Remarking that the work of the elementary school is to give a general education on which, later, specialisation may be based, he asked why there was not as great a variety of type in elementary as in secondary schools. He approved the new Board of Education memorandum on the subject, and, in advocating a large place for science and handwork in schools, suggested—possibly with the administrator's desire of avoiding too much criticism against its cost—the plan of working in two shifts, alternating between classroom and practical room for both boys and girls in their last two years of school life. Mr. Tipping, of the Scarborough Summer School, followed with an account of the work done at that school

for helping teachers, and Dr. Woollatt spoke on the desirability of manipulative skill on the part of the teacher. A discussion followed, shared in by Dr. Bonney, who deprecated the use of elaborate apparatus, and by Sir Philip Magnus, who insisted that handwork should be an integral part of the curriculum, that it should be continuous and progressive in scheme, that all teachers in their training should be taught handwork principles, and that the subject should be taught in schools by the ordinary teachers in a special room. Miss Foxley urged the desirability of choosing future teachers possessed of finger cleverness. Prof. Green remarked on the value of the variety of materials used in the Scarborough school. Miss Cleghorn closed the discussion by welcoming handwork as a subject in the primary school, but pleaded that the special needs of girls should be remembered.

The meeting then became a joint meeting with the Chemistry Section to hear papers by Mr. Blair, chief education officer of the London County Council, on "The Relation of Science to Industry and Commerce," and by Sir W. Tilden, whose paper was read by Mr. Hugh Richardson, of York. Mr. Blair's paper has been published *in extenso* in *Nature* for September 15th. It is a most valuable compilation of facts and of the opinions of employers and those seeking employment. Much in the paper has been said before in various places and in small fragments, but it has been left to Mr. Blair to gather together in one well-digested whole, and in authoritative fashion, a statement of the real position of affairs. In the discussion, in which Dr. Bovey, Dr. Bielby, Principal Griffiths, Sir William White, and Mr. J. E. Stead took part, it was maintained that things are not quite so bad in Britain as is sometimes declared; that manufacturers do value education, especially scientific education; and that probably the main cause of dissatisfaction lies in the want of means of communication between employers and professors.

On Tuesday we were treated to two papers of great practical interest. Mr. J. Eaton Feasey, of Sheffield, urged the advantages of doing much school work in the open air, and showed that some can be done there only. By some beautiful lantern-slides he showed how gardening, arithmetic, mensuration, geometry, elementary science, meteorology, and nature-study are carried on at the Ranmoor School. Mr. G. G. Lewis, of London, followed with an account of open-air work done on Hampstead Heath, Saturday rambles to Epping Forest, Richmond Park, and Charlton Quarry, and long-distance excursions lasting a week.

The third paper, by Mr. Alex. Sutherland, of Caithness, still further urged the value of school gardening. He claimed that it teaches respect for labour, corrects pleasure-seeking tendencies, and brings boys into sympathy with agriculture. Prof. Mark Wright graphically described a "Training College under Canvas" in two students' and boys' camps, at Warkworth in 1908 and at Richmond (Yorks) this year. Two papers, by Miss Butcher on "The Agency of Notations in the Development of the Brain," and Mr. S. F. Wilson on "Some Effects of the Extension of the Elementary School System on the English Character," were much condensed by their authors, owing to the lack of time for their full reading, and for the same reason discussion was impossible.

The subjects down for discussion show a determination on the part of those responsible for this year's selection to secure due attention to the claims of mental science and administration. They brought the work of researchers in fields lying near and about the regions of educational method and practice to the notice of teachers, and invited discussion by them. A tone of caution, eminently befitting the Association, was observable in the deliberations, but the spirit of research has been aroused, and we may hope for real benefit from the alliance of researcher and practitioner.

The two large administrative questions—the connection of schools with places of higher education, and the interest due from industry and commerce to education—having been raised in so striking a fashion, must now be prosecuted to an issue.

These three matters are sufficient both in magnitude and in treatment to have lifted the meeting of 1910 to a position of importance in the series, and fully justify the claims of the section to a place in the Association.

OXFORD LOCAL EXAMINATION, JULY, 1910.

HINTS FROM THE EXAMINERS' REPORTS.

THE Revising Examiners find it necessary again to direct attention to the prevailing habit of answering irrelevantly. Candidates catch at some word in a question, and write down, often one after another in nearly the same language, what that word recalls to their minds. This may arise sometimes from injudicious haste, but appears to be usually due to their relying entirely on what they have heard in class, and not thinking for themselves. To impart knowledge is a necessary part of education, but it is not the whole: pupils need to be trained to use other faculties besides the memory.

The Revising Examiners also wish to direct the attention of teachers to an error of judgment which is a frequent cause of failure in the language sections. It is the established practice, necessary in view of the great difference between the best and worst candidates, to set two alternative passages of English, one harder than the other and receiving more marks, for translation into another language. A very great number of candidates attempt the harder passage and fail entirely, whereas they might have done enough to pass on the easier passage. Teachers would do well to warn their weaker pupils against this mistake.

SENIOR.—The examiners in *Arithmetic* state it is necessary to direct attention to the three following points: (*a*) the use of approximations is being very generally abused; (*b*) there appears to be a

false impression that the use of decimals is always preferable to that of vulgar fractions, vulgar fractions being in consequence often changed to decimals most unjustifiably; (c) in their desire to avoid showing up a long working candidates are more than ever guilty of omitting altogether from their exercises essential calculations.

Commenting on the answers to one of the *English History* papers, the examiner said diffuse writing was not a common fault; indeed, the tendency was rather in the opposite direction—to condense the answers too much in the form of analysis; thus the "Causes of the Wars of the Roses" were often merely disjointed statements labelled (a) and (b); and it was clear in many cases that the writer did not understand what he was writing, but had committed a list to memory. The most frequent cause of loss of marks was failure to read the questions carefully, and to think of their meaning. Some answers were too vague, and not sufficiently illustrated by historical facts. The comparison of two careers in parallel columns is a form of answer which teachers would do well to discourage.

The weakest points in *English Grammar* were the frequent disregard of instructions given in the paper; the writing of verbal definitions, the meaning of which was not understood fully. In many cases no examples, and sometimes wrong examples, were given. The worst answers in the paper related to "Slang." They often revealed grave misconceptions as to what is and what is not good English. The difference between slang and bad grammar was often missed.

A considerable number of candidates suffered from a somewhat unintelligent misinterpretation of the questions set on the prescribed *Works of Tennyson*. Attention should be given to grammar and spelling. The spelling of classical proper names was frequently grotesque, even in otherwise good papers; and there were many really illiterate answers.

There was a fair proportion of good papers on *Shakespeare's "Hamlet,"* but perhaps an unusually large number of candidates failed to attain a satisfactory standard. Often the text of the play would appear to have been insufficiently studied, and essays were written which might have been composed with little more than a cursory reading of it. There was the usual verbosity, and more than the usual carelessness, especially in the reading of several questions. For instance, an astonishingly large number of candidates compared the character of Laertes with that of Hamlet, although instructed to compare it with that of Horatio.

The work on *Scott's "Woodstock,"* as a whole, was rather disappointing. In the answers submitted the vice of utter irrelevance is still lamentably prevalent. Candidates are evidently not trained as they ought to be in the right methods of framing their answers. Attention to the precise scope and limits of a question is in itself good mental discipline and leads to clearness of thought and expression.

In *Geography*, the examiner states, there are also satisfactory signs of more general recognition of the fact that the study of *distributions* is essential: and that no combination of physics, geology, history, or economics can take its place. The weak point of the whole examination is, however, the general want of accurate knowledge of topography at all proportionate to the rest of the work, and sufficient to admit of proper understanding of questions of distribution. For example, candidates, who gave excellent answers to questions on the cotton-manufacturing district of Lancashire or on towns on the coasts of England, not infrequently gave unmistakable evidence (direct or indirect), in answering the map question, that they had no clear idea of the position in England of the places they had been writing about. The need for much more careful and extended use of maps throughout cannot be too strongly insisted on. The teaching of the geography of the British Empire seems to have been largely neglected or slurred over. There was a surprising ignorance of localities, minerals, or political divisions in South Africa. There is a distinct improvement in the standard of the exercises, taken as a whole, indicating that the subject is receiving more careful attention. Yet the inability of many to mark even the approximate positions of such features as the Cheviot Hills and the River Aire, and such important towns as Merthyr Tydfil and Barrow-in-Furness is very serious. The broader features of the physical geography of the world as a whole need to be more *systematically* taught. The opportunities for showing special historical knowledge in regard either to the formation of the United States or the early trade of Britain were taken advantage of by very few candidates.

In *Latin Prose Composition* the work of the candidates failed to reach a reasonable average. Those who offered the harder passage were too much inclined to write unmanageably long sentences and, in general, to prefer paraphrase to precision. The easier passage was well understood, and, in some instances, excellently rendered, but many structurally creditable versions of it were practically ruined by almost countless blunders, due, beyond doubt, in some cases, to inexperience, but, in too many, to heedlessness and indifference.

Of the *French* the examiners say there was very great variety in the merit of the composition. A large number of exercises were done very creditably, and showed a genuine command of the language, but many were of very little value. Inaccuracy in small detail was the prevalent defect; vocabulary was very fair. Very few candidates chose the easier of the two pieces set, though a great many, who failed entirely over the harder passage, would probably have done creditable work if they had essayed the more modest task. Free composition was attempted for the most part by only the weaker candidates. The great majority of exercises showed no command of vocabulary and were disfigured by gross grammatical blunders, especially in the verbs. None revealed

any knowledge of French idiom. The answers to the questions in accidence were done fairly well, but there were many candidates whose knowledge of irregular verbs did not extend beyond the present tense. Only the best candidates did the questions on syntax satisfactorily; the majority of answers failed to show an intelligent grip of the subject.

The translation reached a consistent and fairly high level. Errors of grammar were few, and vocabulary satisfactory. Idiom remains a stumbling-block to many. There seems to be an increasing habit of offering alternative renderings of the same word or phrase. This detracts from the merit of the work, and does not assist the candidate's prospects.

Such errors as the omission of necessary brackets and unjustifiable cancelling of terms in a numerator with terms in a denominator were so common as to show that there was often no real grasp of the principles of *Algebra*. It appeared that such questions as that which had to be solved graphically have been extensively taught, but it has not been impressed upon pupils that a diagram without any sort of explanation or indication of its meaning is not, by itself, a sufficient answer to such a question.

The practical work in *Geometry* was, on the whole, fairly accurate, but few were able to do more than the merely mechanical part, chiefly owing to ignorance of the properties of a rhombus. More practice is required in problems which demand the application of geometrical principles. The general standard attained in the theoretical work was disappointing. The proofs were far from rigorous, and in many there was an entire absence of logical and well-reasoned statement. Points and lines were frequently put down in the figures without any description whatever. There were many weak attempts to establish *reductio ad absurdum* proofs of properties which could be proved more easily by direct methods. In proving the congruency of two right-angled triangles it was hardly ever clearly stated that the triangles were equal because the equal angles were right angles, and in other cases of congruent triangles the candidates often failed to realise the necessary conditions for congruency. In dealing with the question on a parallelogram, comparatively few were able to rotate a triangle correctly about a side. It is quite clear from the answers to this and to other problems in the paper that the study of geometry still mainly consists in learning a few isolated propositions, and that sufficient importance is not attached to the application of the principles which they establish. The work would be considerably better if, in addition to a knowledge of propositions, pupils were taught to take into consideration the various conditions which might lead to the solution of any given problem.

Commenting on one of the papers on *Heat*, the examiners in physics remark that the candidates with few exceptions failed to solve the two simple numerical problems. The same weakness was noticeable in the candidates who presented themselves for examination last year. More algebraical and arithmetical exercises involving physical quantities should be set in the lessons on this subject. The definitions were, for the most part, accurate, and the descriptions of experiments and of phenomena were concise and clear.

The work in *Sound, Light, and Heat* generally was weak. Candidates seemed to need practice in writing out solutions and in expressing themselves clearly and concisely. Even when the experiments described had been worked in the laboratory, a clear account of the work done was beyond the capacity of a majority of the candidates. The signs in the formula for the convex mirror and the fact that the image is virtual were sources of much confusion.

Junior.—The work in *Arithmetic* was not satisfactory. There was evidence that at many centres this subject receives inadequate attention; the candidates at these centres were extremely careless and inaccurate, and were often ignorant of the most elementary principles, while their answers were frequently so unmethodical in arrangement as to be practically incomprehensible. It was clear that many attempted to answer questions before they had carefully considered what results were required. The omission of the units involved in the working of an answer was very common, and many errors were due to this cause. Comparatively few were able to follow out a connected chain of reasoning; this defect was especially marked in answers to a question on the metric system, where the different steps were usually taken without method and without order. Want of familiarity in the working of decimals was often only too apparent. In an example on the simplification of fractions the number of those who betrayed ignorance of the correct way of dealing with the signs plus and minus in the final addition was simply astounding. Few were able to obtain correctly the number of weekdays between two given dates, the laborious method of setting down all the days and then eliminating the Sundays being frequently resorted to.

Two tendencies must be condemned, say the examiners, in *English History*, viz., the habit of answering at inordinate length, and with much consequent irrelevancy, questions, or parts of questions, demanding the shortest treatment; and another of treating others in a series of short, jerky headings. Concerning the answers to another paper in history the examiners state that evidence of sheer cramming is abundant. There is some tendency to irrelevancy, and a good deal of inaccuracy and confusion, but the most serious defect is failure to understand the meaning of the wider questions. The arrangement of answers is creditable, but many candidates put down their facts in a numbered column, without any attempt at construction.

Many of the papers in *English Composition* sent in were almost entirely devoid of merit: the writing was slovenly and sometimes illegible; capital letters were not used after full stops, nor was the semicolon employed, while in not a few

cases no attempt at all was made to mark off the sentences; the spelling was weak, mistakes occurring in the simplest words; and the point or scope of the question was not considered. The passage to be paraphrased was merely rewritten, perhaps with one or two verbal alterations.

In the paper work in *Geography* the questions seem often to have been carelessly read, and detail relevant to the place but irrelevant to the question is often heedlessly inserted. There is a tendency to conceal a lack of knowledge of locality behind general verbiage. Preciseness is also desirable in using descriptive terms; the climate of a country is not defined with sufficient accuracy by the use of such vague expressions as "delightful climate," "fair amount of rain."

The answers on physical geography were less satisfactory, and left an impression of mechanical and unscientific study. Little discrimination was exercised by the majority of the candidates in their choice of examples of general principles. Vague generalisations unsupported by definite examples are practically worthless.

The special unprepared passage in *Latin* was done badly by nearly all who attempted it, owing to the frequent elementary blunders. In answering the general questions many candidates gave superfluous information not gathered from the author nor necessary to the understanding of the book, omitting the facts found in the text.

Many candidates taking *French* seemed to know the accidence of their verbs, except that of the reflexive forms, but to be unable to apply their knowledge. In translation the vocabulary was fairly adequate, but most of the candidates seemed to have been insufficiently practised in composing complete sentences. A common defect in the composition was ignorance of the tenses of ordinary verbs, while false forms occurred very often. The majority used forms of similar sound without discrimination (*e.g.*, trouver, trouvé, trouvez, trouvait). Very few were able to deal with the idiomatic sentences.

In *Algebra* arithmetical errors were too frequent. Questions on "Indices" were very rarely solved; and the problem was done by few. The "Graph" was attempted by comparatively few, of whom only a small proportion had any success; and extremely few did it properly. The unit was nearly always injudiciously chosen, with the result that the points were rather guessed at than found.

In the opinion of the examiners the paper in *Geometry* was not so well answered as those set in recent years. A considerable number of the candidates paid almost exclusive attention to the construction questions, neglecting those which involved a more scientific knowledge of geometry; and many failed to distinguish between experimental verification and logical proof.

Angles which were correctly drawn were often measured with such a degree of inaccuracy as to suggest that the protractors used were of a very rough kind.

There are now so many different text-books of geometry in use that it is better to give a brief, but intelligible, enunciation of a principle involved rather than a numerical reference such as "Theorem V."

In proving that "the diagonals of a rhombus bisect one another at right angles, and also bisect the angles of the rhombus," many of the candidates assumed that the figure was a parallelogram, others assumed also some of the properties which they were required to prove. In the answers to this and others questions there frequently occurred the usual error that two triangles are congruent when two sides and an angle not included are equal in both.

Commenting on the work in *Mensuration*, the report states that beyond a general statement that the work of the great majority of the candidates was highly satisfactory, there are three points of detail requiring notice.

(1) There has been a considerable diminution in the number of cases in which numbers were added by adding their logarithms. A few such instances occurred even in the work of candidates whose knowledge was otherwise of a high class; but they had to suffer for the error just as much as the most ignorant.

(2) Several used the sign + between numbers which were to be multiplied together, instead of the sign ×. Teachers should take precautions against this source of failure.

(3) A very large number did not know the meaning of a "sector" of a circle: they confounded it with a triangle.

The papers in *Theoretical Chemistry* were disappointing, not so much from lack of knowledge on the part of the candidates as from the failure to answer properly the questions set. A lack of power to express their thoughts clearly and briefly was very general among the candidates.

Teachers would do well to pay more attention to this point, and also to avoid, in teaching elementary chemistry, the use of technical expressions and involved language which, as these papers indicate, are frequently not understood by their pupils.

PERSONAL PARAGRAPHS.

IT is a big figure in English higher education that has passed away in Edward Charles Wickham. University and school organisation, classical scholarship, and liberal thought have all felt the impress of his personality. For my own part, I have come into contact with him only indirectly through his Horace commentary and translation. One knew of him, of course, as headmaster of Wellington, and later as Dean of Lincoln. Twice only did I see him in the flesh, the first occasion being in the examination schools at Oxford when I was sitting for the Hertford scholarship for which he was examining, the second at a Headmasters' Conference meeting. But it is not given to all to fall directly under the influence of men like Wickham, or to realise how great that influence is or has been.

He died at the age of seventy-six, having been born in 1834. He breathed the air of scholarship from very early days, as his father and two uncles were schoolmasters. At Winchester he did so well that he became a Fellow of New College when he was only seventeen. At Oxford he took a first in Moderations in 1854, and a second in Lit. Hum. in 1856. (It is curious to note how many men who have afterwards developed into finished scholars have had to be content with a second class in classical finals; the case of Prof. Henry Nettleship is the one that occurs to me at the moment.) He won also the Chancellor's Latin verse and essay prizes.

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The Gladstonian vein in him was now to be revealed. After spending a short time as an assistant-master at Winchester he returned to New College as a tutor in 1859, where his reforming zeal began to work. He induced the college to accept only honour men as commoners, and to "suspend some Fellowships in order to obtain funds for establishing open scholarships." The standard of work was thus raised, and the college increased in numbers and efficiency. In the wider sphere of the university, however, his persistency as an advocate for reform had far-reaching effects. Efficiency in teaching depended on the removal of the celibate restriction on Fellowships. With Wickham to goad it, New College led the way, and in 1868 "took power both to elect at its discretion men who were wanted to serve on the staff, and also to retain Fellows who would otherwise have vacated their Fellowships by marriage, on condition of their residing to teach." This example was promptly followed by other colleges, and so was founded the modern system of Oxford and Cambridge.

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It was in 1873 that he took upon himself the difficult task of succeeding Dr. Benson, the maker of Wellington College. Here his innovations produced friction, which in time died down, so that after his reign of twenty years the school was found to have "advanced in numbers and reputation." Of his Horatian studies—commentary and translation—I need say nothing, as they are generally recognised as authoritative. He was appointed by Mr. Gladstone, his father-in-law, to the Deanery of Lincoln in 1893.

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Winchester is supplying a new Canon of Durham to fill the place of Canon Herbert Kynaston, of whom I wrote last month. I know him only through the post on matters of Latin scholarship, and through a set of verse fair copies recently published, which reveal his polished scholarship. A scholar of Winchester under Dr. Ridding, he became a scholar of New College in 1881, took first classes in "Mods" (1882) and Lit. Hum. (1885), and in 1883 won the Hertford scholarship. He was elected to a Fellowship at New College in 1885, and was tutor from 1889 to 1891. In 1892 he became an assistant-master at Harrow, but returned to Winchester two years later on the invitation of Dr. Fearon. As classical scholarship is undoubtedly his strong point, he should be in his element as the Durham professor of Greek and classical literature.

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Miss E. Krabbé, who has two sisters in the teaching profession, has resigned her headmistress-ship of the Hereford High School for Girls, and has gone to Buenos Ayres for a rest and holiday after nearly eighteen years' service at Hereford.

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Miss Sophie G. L. Adams, second mistress at the London County Council Secondary School at Fulham, has been appointed headmistress of the Cheshire County Council High School for Girls at Macclesfield.

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The late Very Rev. George Oakley Vance, Dean of Melbourne, had an interesting educational career. He was born in 1828, educated at King's College, London, and at Lincoln College, Oxford, and took his B.A. in 1850 with a second class in Lit. Hum. He was the first headmaster of Geelong Grammar School, from 1856 to 1862. After seventeen years devoted to parish work, he was appointed Canon of Melbourne in 1879, and was elected Dean in 1894. Oxford gave him his D.D. in 1888. From 1880 to 1887 he was co-examiner in classics and philology at Melbourne University, and he was also one of the founders of the Australian College of Theology. He edited the *Church of England Messenger* (Melbourne) for thirty years.

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It is interesting to note that King's College School, through its late headmaster, Mr. Douglas Smith, and its present headmaster, Mr. H. Lionel Rogers, is anxious to meet the Institute of Journalists in the matter of a school curriculum suited to prospective journalists. I trust it will be fully recognised that "what journalism wants from the schools" is not the futility of early specialisation, but the best and broadest education our secondary schools and universities can give.

Onlooker.

A Practical English Grammar. By J. T. Prince. v+256 pp. (Ginn.) 3s.—Dr. Prince has in two pages of preface resumed the whole controversy raised by the formal teaching of grammar. He presupposes that the children who use his book will have had six years' training in correct speaking, and that therefore, when they are ripe for it in the upper grades of the (American) grammar school, the following results will ensue: ability to analyse the best literature; power of correct expression in their own speech; help in acquiring a foreign language. There is no reason why these results should not be obtained, for the book is practical and businesslike; the arrangement is simple, and technical terms are neither shirked nor—as is sometimes the case in grammars—obscured by unfortunate definition; above all, there are abundant exercises.

THE SCHOOL JOURNEY: ITS PRACTICE AND EDUCATIONAL VALUE.[1]

By G. G. Lewis,

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(*Photographs by the Author.*)

Travel is recognised as a necessary part of the education of kings, and there are few teachers who would not include a certain amount of open-air work and travel in their ideal curriculum, where expense was no object. Actual objects are better teaching tools than the most vivid description, better even than pictures, lantern-slides, or models. Big things like trees and cows, hills and rivers, castles and cathedrals, ships and factories, cannot be brought into the class-room. We are all theoretically agreed that much of the geography, history, drawing, and practical arithmetic can be taught better in the field than in the school. May we consider for a moment a few of the more obvious advantages of open-air lessons?

(1) The open-air recovery schools and playground classes have shown that children not only gain in weight and health, but that their mental activity is quickened enormously by open-air instruction.

(2) If during school life we can implant the "open-air habit" and give an incentive to find pleasure in the country rather than in the town, we shall have done something for the future man not only physically but morally.

(3) Whereas our present schoolroom atmosphere causes the child to associate the desk and book alone with the act of learning, school journeys train him to learn from the world at large.

(4) Assuming that training in habits of accurate observation is desirable, and that nature provides some of the best material for observation, it is most important that the children's new interests should not be confined to such small objects as can be introduced into the class-room. To reap the full benefit of nature-study, the children must be taken out into the field, where nature can be studied on an "imperial" scale, and where natural phenomena can be observed in their own proper setting.

(5) There is a further advantage, not so obvious perhaps to those who only observe, but very real to those who engage in, open-air work, and that is the way in which child and teacher are drawn into closer understanding and more intimate friendly relations on the school journey. This is perhaps the greatest of all, for the *entente cordiale* thus established is carried into the school and makes the more formal routine work much easier and productive.

You will, I am sure, prefer to have from me practical personal experience rather than theory. I propose, therefore, to describe some of the school-journey experiments which have been tried at Kentish Town Road School, discussing incidentally some of the difficulties in the way of other schools.

Fig. 1.—Measuring the Depth of the Fleet Brook on Hampstead Heath.

Mr. Feasey has shown what valuable work may be done in the playground and school garden. For the last five and a half years my lot—by no means an unpleasant one—has been cast in an old British school, "Transferred to the L.C.C." For playground we have a forecourt facing a main road, and only just large enough to hold our 240 boys standing, and so *our* open-air activity has not developed into playground or garden arithmetic. Rather did we cast longing eyes at Hampstead Heath, one and a quarter miles away, which a kindly H.M. inspector obligingly agreed to recognise as "a museum or other place of educational interest." Now, weather permitting, every boy in the school spends one half-day per week in nature's class-room.

[1] A paper read before the Educational Science Section of the British Association at Sheffield, September 6th, 1910.

The question immediately arises—Can so much time be spared for an *extra* subject? There is no extra subject. The time-table for the afternoon includes ordinary school subjects which can be taught better in the open air. Thus one of our three drawing lessons (the freehand and model), one of the two nature lessons, one of the two geography lessons, and one of the three drill lessons may be put down for the "outside" afternoon. If wet, these lessons are taken in the school; if fine, the ordinary time-table is dropped, and nature or practical geography lessons are combined with drawing throughout the afternoon. Children assemble at school, the register is closed at 2, and the open-air lesson lasts at least from 2.30 to 4, when the teacher is at liberty to bring the children back, though not infrequently teacher and children prove enthusiastic and "forget the time."

Tree Study.—Remembering that our chief educational object is the study of big things, our nature lessons are grouped mostly round trees. Trees are so big that quite large classes can sketch and observe them with ease; they are always available, yet constantly presenting new developments for observation; and specimens of leaves, flowers, fruits, and buds are so plentiful that the open-air work can be followed up in the drawing, modelling, and nature lessons in school.

Let me describe a first lesson to the little boys.

Grouped in a circle round a tall poplar, the children (supplied with millboard, drawing paper, and pencil) are set straight away to sketch its outline. The result is appalling. Many hardly look at the poplar, and draw their idea of a tree from memory. The thickness of trunk and branches proves confusing. So we start again by directing attention to the trunk, and ask for a single line down the middle of the page. "Never mind the thickness—just show me how it grows." Thus we get a more or less straight line. "Now look at the branches. Pick out one of the biggest and put that in." It will take some time to get the "blind" boys to do this properly. They will draw a conventional tree with branches coming out horizontally instead of running up by the side of the main trunk, but at last we get a diagrammatic drawing of the tree, showing the arrangement of the trunk and some of the branches. Then follows an oral composition lesson, in which the skilful teacher will increase the limited vocabulary of the children, and ask them to write down some of the descriptive words used. Young children will remember and spell such words much more readily when introduced in connection with some definite object. The bark is next taken in a similar way, a sketch being placed in the lower right-hand corner. The leaf goes in the left-hand lower corner, flowers, if any, in the top left-hand, and fruit, if any, in the other.

Fig. 2.—A Lesson on Village Life (Oakridge on the Cotswolds).

It will not require an honours B.Sc. to occupy three-quarters of an hour in this way, and see what has been done—drawing, nature-study, composition, spelling! Can we spare the time?

Trees form the backbone of our open-air nature work in all classes, but soils and plant ecology, toadstools, pond life, clouds, and snow also receive attention.

Practical Geography.—The other half of our scheme is concerned with physical geography. The ponds give us lake, island, cape, and bay, and we are most fortunate in having a complete river system in miniature. The Fleet brook rises as a chalybeate spring in the Vale of Health, winds in true river fashion for a mile along the baby valley it has cut for itself until it empties its waters into the Hampstead pond, which is magnified into a sea. The sea-coast is bordered by stiff cliffs, from the sides of

which rushing torrents have torn deep-cut chines and ravines, just as larger streams do in the Isle of Wight, and they carry down loads of mud from the uplands, spreading it out as deltas in the tideless ocean below.

The nine-year-olds take up river work in more detail, measuring the width and depth of its channel and making little maps of its bends. The hills and slopes receive attention, and the meaning of watershed and river basin is grasped. The way is prepared for next year's study of the colonies, by letting the boys imagine that they are in a new country. They explore, prospect for minerals, build towns and forts, and construct railways along easy gradients. Elementary scenery study follows in the higher standards. Notice is taken of the rocks where exposed, the outlines of distant hills are sketched, the work of the river is further studied, especially its speed, the formation of bends, and the varying slopes of the valleys. The top class devotes considerable attention to contour work, making a raised contour map of the district.

Latitude is Desirable.—No hard and fast line is laid down as to the lessons to be taken on a particular day. So much depends on the weather and what may turn up.

The scheme itself may not be covered, the teacher unexpectedly striking some rich vein which he would like to follow up. Thus Mr. Bowen, my first assistant, has devoted considerable attention to mapping and surveying; Mr. Rose has taken his boys further afield and worked out the special history and physiography of the Golder's Green district; Mr. Wilton, a Devon man, found lessons in sheep, moles, bees, worms, and haymaking, which the rest of us almost ignored at first. Mr. Gofton, our drawing master, cultivates the art side, and his boys produce most creditable sketches of trees and scenery in pencil and colour. By such "landing out" we have added considerably to our effective list of lessons, and I cannot speak too highly of the hearty manner in which my colleagues have assisted me in constructing a workable scheme.

Fig. 3.—Dramatisation at the Seaside—Canute and the Waves.

Discipline.—A new style of discipline has to be cultivated in the open air. We do not march our boys to the Heath; they walk in twos and threes, and gather quickly round the teacher, little boys in front, big ones behind. At first the novelty of having a roofless class-room plays havoc with the attention. Green grass goes with play—not work. Can we wonder if boys look up when a bird opens a conversation just overhead? The wise teacher will ignore a certain amount of this kind of inattention. But in case it gets bad, there is the sketching. Boys are always good when using the pencil. We have been troubled little by outsiders. Sometimes they gather round, and make appreciative remarks; but if they make the teacher nervous, there is once more the sketching, which is not interesting to the casual visitor. With regard to numbers, we find no difficulty in controlling classes of forty, fifty, or even sixty upper boys. But thirty lively seven-year-olds constitute a handful, and even this number might be inconvenient in a crowded park.

Preparation, Examination, &c.—No preparatory lessons should be necessary before taking children out into the open air for ordinary instruction. The best preparation for a lesson on a tree, a river, or clouds, is to take the children straight to the actual thing. Neither is it necessary to write notes afterwards, though this would make a good composition exercise. If a regular scheme of open-air work be sanctioned. the teacher cannot reasonably object to having it examined. But it should be examined in the open air, not in the class-room. Take the children to a new tree, ask them to sketch and describe it, and then judge the quality of the work by this result. It is not fair to go into the class-room and ask for drawings and descriptions of distant open-air objects.

Difficulties in the Way.—Distance is frequently urged as an obstacle to school journeys, but it is surprising to find how many schools, even in London, are within a mile and a quarter of a *large* open space, while quite a half are within that distance of some park. For some time we have cast longing eyes on the trams, not half filled at the time of day we should use them. Alas, our children are neither blind, deaf, dumb, delicate, crippled, nor mentally deficient; they are simply ordinary normal children, and the time is hardly ripe, perhaps, to ask for free trams for them. A step has, however, been taken in the right direction this year, the L.C.C. granting reduced fares to parties of children travelling with their teacher.

The country teacher has plenty of material at his doors, but only too often he feels unable to leave the remainder of his school with the pupil teacher which constitutes his staff.

Saturday Rambles.—I have devoted so much of my allotted time to the half-day journey in school time because, although it may not be so striking as the longer-distance journeys, it is more important and more valuable, reaching every child in the school and forming a definite part of the school work. We have, however, tried three other forms of school journey.

The day ramble is the oldest form of school journey, taken on Saturday or other holiday by enthusiastic teachers in all ages. It is the "way out," where there is a will, from conditions which may prevent journeys in school

time. Our Saturday ramble usually takes the free and easy form of a trip to obtain specimens, to Epping Forest for toadstools, Richmond Park for pond animals, or Charlton for rocks and fossils. Graphed sheets containing route-map and notes are prepared, and all those who can produce the 6*d.* for railway fare are taken. Some London schools take day rambles in school time, in which case preliminary lessons are very wisely given, for on a day's ramble to a distant place likely to be visited only once in the year, the teacher will naturally wish to cover a wide range of subjects.

THE LONG-DISTANCE JOURNEY, in which children are taken away from school for a week or fortnight under their teachers' care, is becoming increasingly popular. Within the last few years the Board of Education has sanctioned them in school time, but as only two teachers could be spared in school time, we continue to go away at Easter, for all the teachers prefer to sacrifice their holiday rather than be out of a good thing.

The cost for a week varies from 18*s.* to 21*s.* per head, and our school of 230 usually supplies forty to fifty boys who are able to save this amount during the year, though a few are assisted by friends of the school. Very poor schools are assisted by the "Children's Country Holiday Fund," which finds the homes for the children and finances a fortnight's holiday, thus relieving the teachers of most of the financial and home-finding anxiety.

The L.C.C. sends supply teachers to take the place of those away, and allows a reasonable requisition for maps and special equipment.

The one disadvantage of the cottage plan is that the children and teachers do not "mess" together, and having meals with the teacher is in itself an education and bond of union. Most teachers try to minimise this disadvantage by securing the parish room or a barn as a common room.

The chief object of the long-distance excursion is not so much improved health—though that results—nor a means of applying open-air methods—though this is done—but rather the introduction of the children to a number of new objects which they cannot see in their own neighbourhood. We, therefore, seek centres with strong educational interest some distance from London, and endeavour to find a fresh home every year. Thus, in 1906, thirty lads spent a week in the midst of the lovely cañon scenery of the Wye. For the first time many of them saw a deep gorge, passed beneath a portcullis, and trembled on the edge of a precipice. In 1907 forty journeyed to Abergavenny, climbed mountains over 2,000 feet high, explored stalactite caves, descended a coal-mine, scrambled over the ruined walls of three castles, and heard people speaking a strange, weird language. In 1908 no less than fifty boys were taken to Shanklin, in the Isle of Wight, a trip which included historical Winchester, Portsmouth with its forts, Nelson's *Victory*, and a modern Dreadnought, St. Catherine's Point and Lighthouse, a Roman villa, Alum Bay, Tennyson land, any amount of scenery study and geology, with incidentally a voyage through the blizzard which wrecked the ill-fated *Gladiator*. Last year the Cotswolds supplied a new set of lessons, Roman Cirencester, a prehistoric barrow, Gloucester Cathedral, quarries and fossils, a woollen mill, and distinctive village types. This year Folkestone as a centre yielded the study of coast scenery and landslips, plenty of history at Canterbury and Walmer, special admission to the interior of one of the closely guarded forts, and last, but not least, a never-to-be-forgotten voyage across the Channel to Boulogne.

These are only a few of the more striking *new* things of which the boys made the acquaintance, and it will not be surprising to learn that educationists have variously estimated the value of one such eight-day trip as being equivalent to from four to eight weeks' work in the class-room.

There are other than purely educational advantages. The insight the teacher gains into boys' characters is most remarkable. A week away from mother's tender care gives a lad self-reliance, makes him less selfish, and fosters good-fellowship. Not infrequently the rascal of the class proves to be a most entertaining friend and devoted attendant, and on returning to school he will strive his utmost to retain his teacher's regard.

Yet another point must be credited to the educational excursion, especially when it takes a boy over factories and works, in that it enlarges his very limited idea of employments open to him when he leaves school. Morally the lad will surely benefit, for, having once enjoyed a properly organised holiday, the mere lounging, pier and pierrot seaside holiday will never in future satisfy him.

ORGANISATION.—The organisation requires a considerable amount of care. It is easier to find a centre of educational interest than to induce a host to take in fifty boys at 10*s.* a head. The sleeping accommodation is the chief difficulty. When we suggest putting three boys in a big bed and making up a bed for two more on the floor, half the battle is won. We have never had to complain of insufficient food. After a plain breakfast, boys set out with lunch of meat and jam sandwiches, returning to hot dinner of two courses at 6 or 6.30.

Some schools camp out, but their experience has not induced me to follow their example. Wet weather will break up the whole arrangements, and if the district be at all interesting, *all* the time is wanted for exploring it. Neither teachers nor scholars can spare valuable time for cooking or washing of pots and pans.

Mr. Pratt, of Paddington, takes his boys to his own farm at Dymchurch, and they sleep on army mattresses with two blankets in bunks built inside old railway carriages. English weather and the anxiety of English parents prevent us also from following the oft-advised German plan of tramping from place to place, and sleeping on straw in barns and schools. Yet another plan has been tried by Mr. Shaw, of Newcastle, who arranged an exchange of hospitality between his own boys and a school in the Lake District. Each "Lake" boy received a Newcastle guest, while the country boys had a week in Newcastle later. This is an excellent plan where it can be worked.

STAFF AND NUMBERS.—Though we have taken a party of fifty boys and six masters, our happiest trip was with thirty boys and three masters. Larger parties should be divided. However small the party, at least two teachers should accompany it, in case of emergency. There is plenty of work for three men if the trip is done well. At Kentish Town Road the masters take the work in turn. The organiser for the year selects his centre, makes all arrangements for travel, lodging, and sight-seeing. The treasurer receives the money in small amounts during the year, buys the tickets, tips porters, and pays all bills. The house master takes charge of meals and bedrooms, and is responsible for health and comfort generally.

GUIDE-BOOK.—Practically every school prepares a guide-book, and much good-natured rivalry is evident in the devices used to produce the best book. The hektograph is most commonly used, because it allows of the use of colours, but cyclostyle, typewriter, and lithograph have all been used with good effect. Needless to say, hektographed editions are strictly limited and the demand far in excess

of the supply. My little "Malvern" Guide-book of the first Bellenden trip in 1896 is worth its weight in gold—to me.

Inspectors and the School Journey.—Both Government and Council inspectors appear to have taken, on the whole, a sympathetic interest in the various school-journey experiments. They have taken the trouble to spend whole days with the children in the field, and not formed their conclusions from an inspection of notes on the return to school. Naturally, they have found much to criticise; it could not be otherwise when teachers are struggling to carry through a big week at a small cost. But while it is easy to say that each boy should have a bed to himself, that a bath should be provided, that the party should be equipped with mackintoshes, it is not so easy to supply these requirements. When education authorities are empowered and willing to spend money on school excursions, teachers may perhaps welcome such pressure from H.M. inspector. But at present the tendency is for H.M. inspector to make suggestions, while education authorities content themselves with issuing rules for the conduct of school excursions embodying them. Every fresh requirement of this sort reduces the number of available hostels and increases the teacher's already heavy task.

In some rare cases there appears to be a fear that the school journey may degenerate into a Sunday-school treat. "Where are the boys' notes?" was the first request of one of H.M. inspectors. My earlier remarks show that I am not opposed to note-taking during open-air lessons where the work is intensive. But if the centre is at all interesting, the work is of such an extensive nature that note-taking is an unnecessary mortification of the flesh. I have heard of poor little fellows being taken straight from bed to do an hour's work with note-book and pencil before breakfast! It is hardly less cruel to make them sit down for an hour after dinner at night to write notes. The early morning should be free for a run before breakfast, the evening for informal chats and sing-songs. Surely, if boys are busily engaged in sight-seeing and imbibing knowledge from 9 to 6, this should be sufficient, especially when they have been saving up hard for a treat all through the year. Rough sketches, with the briefest description taken *en route*, are all we have ever asked from our boys, and I contend they are quite sufficient. While recognising the good intentions of the inspector and grateful for his sympathy and encouragement, I would entreat him to be sparing in his requirements while the school excursion is in its experimental and voluntary stage. The teacher who will take all the trouble to prepare a guide-book and carry through a week's conducted tour may be trusted to see that his seed bears some educational fruit.

The Doctor and the School Journey.—Needless to say, our good friend the doctor has been keenly interested in this phase of open-air work. He has weighed, sounded, and examined the boys before and after the trip, and drawn his conclusions therefrom. Generally speaking, the boys show a marked physical improvement even in a short week's stay in the country. Weak chests especially benefit, but one specialist at least is afraid of heart-strain, and it may be well for teachers to leave behind those who have any heart affection. But even doctors differ, and the layman finds it difficult to understand why a daily climb for a week to a home 600 feet above sea-level should lead to considerable heart-strain in the case of forty healthy boys, while the daily climb of 100 delicate children to Shooters Hill Open-Air Recovery School, 400 feet above Woolwich, should only result in a marked increase of the percentage of hæmoglobin in the blood.

The advice to have two hours' lie down in the middle of the day is worth keeping in mind, though not always possible to carry out.

The Open-air School in Epping Forest.—The great disadvantage of the long excursion is that only a portion of a class can afford it. To remedy this, Mr. Rose, who has taught both open-air and playground recovery classes, suggested that he should take his whole class (thirty-five boys) to Epping Forest for four days to carry out the ordinary school subjects in the Forest. A "retreat" fed the boys well, and found army bed and blanket sleeping accommodation in a shed for 5*s*.

Ordinary school subjects, Scripture, reading, practical arithmetic, composition, contour geography, drawing, were taken in the morning, on fallen tree-trunks in the Forest when fine, in an open tea shed on the one wet day. The afternoon was devoted to a school journey. Thus on one afternoon, preceded by their bugler, the boys marched to Aymesbury banks, where Mr. Rose gave a lesson on the ancient Britons, their life, and their method of defence against the invading Romans. Cowper's "Boadicea" was then read by a boy, after which the lads proceeded to measure the circumference of the camp (in chains and yards), calculating the diameter and area. A few minutes' drill and song completed a very profitable afternoon.

This, of course, is a very modest example of the excellent Manchester County School plan. It is economical and has undoubted educational value. As a supplementary school journey I like it, but I should be sorry to see it supplant the week's sight-seeing trip to S. Wales or the Isle of Wight.

OXFORD UNIVERSITY REFORM.

The subjoined extracts from the recently published report of the Hebdomadal Council will be seen to contain a "momentous series of proposals." The Council has resolved that Greek shall no longer be compulsory as a condition of an arts degree, and that this question shall be put before Congregation independently of that of an entrance examination. We cannot but think that the principle of the more open door is an excellent one, admitting as it does candidates more in accordance with the school courses now in vogue and with the studies to be pursued at the University.

In the reconstructed Responsions the compulsory subjects will be Latin, elementary mathematics, together with either Greek or two other subjects to be chosen from a sufficiently wide area of optional subjects, one, and only one, of which may be a modern language. It will be noted that here we have a proper estimate of the comparative value of Greek when it is studied to the point of realising a sound classical education. The necessary and optional subjects are to be taken at one and the same examination.

The proposed new entrance examination, which is to be a substitute for Responsions, will have to be passed before coming into residence by all candidates for matriculation who have not satisfied one of two alternative conditions. It appears well devised to secure first a closer correspondence with public-school curricula, and secondly that matriculated students should have reached a minimum standard of general education. This second effect will, in its turn, help to maintain a proper standard in the schools preparing for it, and also prevent the squandering of university resources in teaching elements which should be learnt at school. This is a great gain. The examination will be the ordinary avenue to matriculation and the

necessary avenue to degrees in arts. Among the compulsory subjects will be included English, *i.e.*, essay and précis or reproduction—again a wise innovation. Generally, in the examination the power of writing English is to be credited to the candidate. In modern languages, the prose composition is to include, not only translation from English, but also "free composition," another device which will command approbation. The arrangement of subjects and alternatives is a wise concession to modern tendencies, and the whole examination—with, of course, obvious differences—bears a family likeness to the London Matriculation examination of the last few years. The salient differences are that in the London examination both Latin and Greek are optional, and all five subjects (six papers) must be passed in one and the same examination, whereas the Oxford examination requires a pass in only the three compulsory subjects at one examination.

I. Compulsory Greek.

Council having resolved that Greek should no longer be a compulsory subject in Responsions, and that the question of the abolition of compulsory Greek should be brought before Congregation independently of any proposal for the creation of an entrance examination, has framed the following Statute:

It is expedient to amend the Statute relating to the Examination in Stated Subjects in Responsions so as to provide (1) that Greek shall no longer be a compulsory subject, (2) that every candidate must, in order to pass Responsions satisfy the masters of the schools in Latin and in elementary mathematics, and also either in (*a*) Greek or in (*b*) two other subjects, one of which must be a modern language.

"1. The examination in stated subjects shall include—

(*a*) *Necessary Subjects.*—(1) Latin: prose composition, and translation into English, either from authors not specially offered or from a book specially offered.

(2) Elementary mathematics: arithmetic and the elements of either geometry or algebra.

(*b*) *Optional Subjects.*—(3) Greek: translation into English, either from authors not specially offered or from a book specially offered.

(4) French: prose composition, and translation into English from authors not specially offered.

(5) German: prose composition, and translation into English from authors not specially offered.

(6) Italian: prose composition, and translation into English from authors not specially offered.

(7) Spanish: prose composition, and translation into English from authors not specially offered.

(8) The outlines of a period of English history.

(9) Elementary politics: the main features of British government, local, national, and imperial.

(10) Elementary trigonometry, statics, and dynamics.

(11) Elementary physics and chemistry.

(12) The general principles of geography, and the geography of the British Isles and Empire.

2. Every candidate shall be examined in any language offered by him in such a manner as to test especially his knowledge of the grammar of that language.

3. No candidate who offers Greek shall be allowed to offer a second optional subject; no candidate who offers a modern language shall be allowed to offer more than one of the subjects (8), (9), (10), (11), (12); and no candidate shall be allowed to offer more than one modern language.

4. A candidate shall be deemed to have passed Responsions who has satisfied the masters of the schools, at one and the same examination, in the necessary subjects enumerated in cl. 1 and also either in (*a*) Greek or in (*b*) one of the modern languages enumerated in that clause together with one of the subjects (8), (9), (10), (11), (12)."

II. Entrance Examination.

The scheme for an entrance examination framed by Council is as follows:

(*a*) *General Conditions.*—1. There shall be, in substitution for Responsions, an entrance examination, conducted on behalf of the University by the Delegates for the Inspection and Examination of Schools. It shall be held four times a year, viz., in March, July, September, and December, at Oxford and at schools and other places as the delegates may determine. It shall not be obligatory that the names of any candidates should be entered for the examination through a college or hall or through the delegacy of non-collegiate students.

2. The entrance examination shall include (i) three necessary subjects, (ii) optional subjects. In order to pass the examination, a candidate must pass in the three necessary subjects at one and the same time, and must also pass in two of the optional subjects either when he passes in the necessary subjects or at some other examination or examinations.

3. The conditions with regard to (1) matriculation, (2) degrees, shall be as follows:

(1) *Matriculation.*—No person shall be qualified for matriculation as a member of the University who has not either (*a*) passed the entrance examination, or (*b*) passed some other examination recognised by the University as equivalent to the entrance examination, or (*c*) been accepted as a candidate for a diploma or for the degree of B.Litt. or B.Sc.

(2) *Degree in Arts.*—No member of the University shall be admitted as a candidate in any of the examinations for the degree of B.A. unless he has either (*a*) passed the entrance examination, or (*b*) passed some other examination recognised by the University as equivalent to the entrance examination.

The effect of these conditions will be to make the entrance examination the *ordinary* avenue to matriculation and the *necessary* avenue to a degree in arts. A candidate who has matriculated on the qualification (*c*), and wishes after he has gone through part or the whole of his course for the diploma or for the degree of B.Litt. or B.Sc. to take up the arts course, will have to begin by taking the entrance examination (or some equivalent examination) as a preliminary examination in arts. But he will not lose any terms which he has kept by residence.

(*b*) *Subjects.*—The subjects of the entrance examination shall be as follows:

I. *Necessary Subjects.*—1. English: to be tested by an essay or a composition on materials supplied; *e.g.*, précis or reproduction of a passage read aloud.

2. Latin or Greek.

(*a*) Unprepared passages.

(*b*) In Latin, a continuous passage of English, to be translated into Latin prose.

In Greek, English sentences, to be translated into Greek. No grammar paper to be set.

3. Elementary mathematics: two papers, (*a*) arithmetic and algebra, (*b*) geometry, excellence in one paper being allowed to compensate for comparative deficiency in the other.

II. *Optional Subjects.*—A. 1. Latin as above, if not already offered.

2. Greek as above, if not already offered.

3. French
4. German
5. Italian
6. Spanish

Unprepared translation, and continuous prose composition, including both translation from English into the language offered, and "free composition."

B. 1. A portion of English history in outline; *e.g.*, either from the earliest times to 1688, or from 1485 to 1900.

2. Elementary politics; the main features of British government—local, national, and imperial.

3. Elementary trigonometry, statics, and dynamics.

4. Elementary physics and chemistry.

5. The general principles of geography, and the geography of the British Isles and Empire.

Candidates must offer one subject taken from Group A and one from Group B.

It shall be an instruction to the examiners to take account throughout the examination of the candidates' power of writing English.

THE RELATION OF SCIENCE TO COMMERCE AND INDUSTRY.[1]

By R. Blair, M.A., B.Sc.,
Education Officer to the London County Council.

It would be difficult to exaggerate the share which our oldest universities have had in the formative life of this country, and the work of the past is still necessary. Universities must continue their detached work; they must pursue knowledge for its own sake or for the purely mental training it gives; they must continue to produce statesmen and churchmen and lawyers and doctors and schoolmasters, and they must educate the leisured classes. I would even go so far as to say that it is a national asset to have institutions setting the standard of efficiency and honour in national games. But the modern world needs something more, especially from the departments of applied science. The sympathy and support which these departments have received from the public have, to a large extent, been based on the belief that they would contribute to the success of national industry and commerce. The same holds true of the large technical institutions with day departments for young manhood. There is a public need, and in some cases a public demand. It is our object to increase the demand.

I have no magician's wand to offer as a means of revolutionising public opinion, and I should like to make clear that I have no thought of advocating mere imitation of German methods, which would be extremely foolish, if not disastrous. The industrial and commercial conditions and the character and traditions of the people of Britain and Germany are dissimilar. Again, the German universities endeavour to send out men ready to take their place immediately, not in the ranks, but as officers in the industrial and commercial armies. Further, the British system of education is so different that not to give heed to what exists would certainly court failure. Many useful lessons may, however, be gathered from a study of German methods; but possibly our most useful lessons are to be gathered from America, where the character of the people is more like our own, and where it is clearly realised that whatever training of the highest kind a man may have, he must still begin in the ranks and climb his way to the top. It has been said that British character and methods produce a few brilliant units and a mass of mediocrities. The surest road to success would probably be for the mass of mediocrities to adopt the methods of the brilliant units.

[1] From a paper read before the Educational Science Section of the British Association at Sheffield, September 5th, 1910.

The normal attitude of the employers, if not of the public, may be expressed in three sentences: (1) Only those value higher education who have felt the need for it. (2) The purely practical man can do much, the purely theoretical man can do little; a combination is therefore necessary. Should one quality only be obtainable, which would be regrettable, that quality should be the purely practical. (3) Teaching institutions may assist individuals to get on; they form no essential part of our industrial or commercial system.

For these three sentiments I suggest that we are all anxious to substitute three others: (1) Setting aside exceptions, every man who achieves success must give so much time to fit himself for his work, whether the time is given in college under guidance and discipline or is expended in self-education. (2) In the end, and again setting aside exceptions, the man who has received the highest training in college under guidance and discipline will, other things being equal, achieve by far the greatest success. (3) The work of research and training carried on in technical school and university college is an integral part of any nation's successful industrial and commercial organisation.

How is the substitution to be accomplished? The demand of the shareholders of an industrial or commercial concern for dividends forms a great stimulus to intelligence and activity on the part of the staff. Without such stimulus in a technical school or faculty of applied science there is a tendency for things to become comfortable. I suggest the following:

(1) The management of all technical institutions and departments of applied science should be put on a business footing. The ordinary governing bodies, as a rule, serve for ordinary governing purposes. The chief need is that of consultative committees attached to all specialised faculties or departments, such committees to be advisory and to be composed of industrial or commercial leaders or experts of the highest reputation. This is probably the best and surest means of enlisting the full sympathy of industrial and commercial leaders. The faculty or department, the curriculum and the examinations, would benefit by having its work and methods criticised sympathetically by experts of the first rank. Such a committee would form the surest medium of communication between the college and the workshop; and its formation would certainly be followed by a wide extension of the appreciation of the advantages of technical education, because the captains of industry would learn exactly the character of the work done in college and how in practice to utilise it.

The head of the teaching department and his staff would by this means gain easy access to factory and workshop, and bring back some of their atmosphere to the laboratory. On the examining committee of the engineering department of the Glasgow and West of Scotland Technical college are the engineering director of the Fairfield Shipbuilding and Engineering Co. and the engineering director of John Brown and Co., Clydebank Shipbuilding and Engineering Works. Such men would probably be generally recognised as the leaders in their particular profession on the Clyde. I understand that it is their practice to look in great detail through worked papers and designs, and to give the engineering department of the college the benefit of their criticisms. Employers, parents, and students cannot but have faith in the instruction given in an institution so aided. Let me make it quite clear that I am not advocating a mixed governing body, but an advisory committee of experts attached to each technical department. Governing bodies should consult such

advisory committees before appointing the head of a department or even the principal of a college or technical institution. In the qualifications of principals and heads of departments it is customary to give too much consideration to academic status and too little to industrial experience and business capacity. Such a consultative body as I have referred to would act as a corrective in this respect.

(2) A connection should be maintained with old students and a record kept of their after-careers. One of the means of success of the American colleges is the list of after-careers of their students. It is almost incredible how little has been done in Britain in this respect. I hope parents and the public generally will develop a habit of asking for such a list.

(3) At each technical institution and university there should be an organisation to assist students in getting placed. The Blue-book recently issued by the Board of Education shows how much English universities have in the past neglected this aspect of their work, and how much there is still to be done to establish appointments committees or bureaus. I am not overlooking the fact that much excellent work has been done by individual professors and occasionally by the secretary or the principal. But this was unorganised. I am asking for an organisation. The manufacturer and the merchant have been denounced in no measured terms by representatives of learning for their short-sightedness in not applying scientific methods to manufacturing and business processes; could not the manufacturer and the business man retaliate that not only have university and technical college goods been of such various qualities that it was impossible to discriminate, but also that scientific principles—even common business empirical methods—have not been applied to the marketing of school and college products? It is a discredit to the universities and technical colleges that they have so long neglected this obvious means of assisting students, this obvious means of promoting the cause they proclaimed.

(4) A change in curriculum and in degree requirements. Let me read some remarks on American colleges which I wrote in 1904. "Again, there is, in each American institution, a considerable 'mortality' or shedding of students. Some students find their general preparation insufficient; some find the pace too great; others find their funds give out; and some are advised that they have made a bad selection. In such cases the American student accepts advice and acts promptly. At every step a student's work is known, and the faculty—staff of professors in each department—every four months discuss fully a student's work. The middle of the third year is the critical point in a student's career. At this stage the requirements of the Institute of Technology demand a final decision as to choice of work. Fifteen men in one department were, at this point, recently advised to change their courses or to withdraw from the institute. I was informed that, as a rule, 25 per cent. of the civil engineering students drop off at the same stage. These numbers have to be added to those who have previously 'fallen by the way.' The greatest patience is extended to the students, and the best advice is offered to them; but in the interest of the individual, as of the standing of the institute and of its influence on industrial work, such shedding of students is regarded as inevitable, and is acquiesced in. It does not follow that the men are 'wasted.' As a rule they find employment of a lower character than they were aiming at; they change the directions of their careers, to their own great advantage, or they pursue a course of studies on the same lines at a secondary institution—a two-year course school."

It appears to me that such kind of advice and action is necessary in British teaching institutions, but it is hardly possible under existing conditions.

(5) Another means of bringing the college class-room and laboratory into closer connection with factory, workshop, and office would be more liberal provision of short, specialised courses suitable to the heads of firms or their successors. I am not referring to that provision of evening courses which is made in technical schools and schools of art, but to provision, whether day or evening, of advanced courses for industrial and commercial leaders or their successors in institutions which there could be no presumed loss of self-respect in attending. Such courses are provided at several colleges; they need multiplication. I know that a large number of able men obtain, at much expense, instruction through private agencies, because the best institutions do not appear to cater directly for their needs under suitable conditions.

(6) As to modern languages, three things are necessary for the majority of students: (i) less the scholar's and more the utilitarian point of view; (ii) more concentration during the later school and college years; and (iii) speaking generally, a better class of teachers.

In conclusion, let me say that this preliminary study of a very large question has disclosed much hopefulness of the future. The obstacles which university and other highly trained men encounter in getting a footing in the industrial world are still formidable, and the breaking down of the barriers between our highest teaching institutions and commercial life forms a specially difficult task. But there is plenty of need for first-class men, and there is not much difficulty in getting the exceptionally good man placed. It is gratifying, too, to find that his Majesty's consuls speak in the highest terms of the personal qualities of our foreign commercial travellers.

On the side of education, too, there is much hopefulness. A distinguished university writer not long ago stated that the object of university education "was not how to keep our trade, but how to keep our souls alive." Between such a representative of university education and the business man who inquires what is the money value of a degree there is little room for accommodation. But the writer did an injustice to the universities, and the facts as to the objects of university education are against him. It may be true that in the long view the keeping of our souls alive is the object of university education, but even the oldest of our universities are becoming conscious that the immediate condition of saving our souls alive is that of saving our trade.

M. BINET'S METHOD FOR THE MEASUREMENT OF INTELLIGENCE.[1]

By KATHARINE L. JOHNSTON.

WITH M. Binet's help given at the Laboratory, Rue Grange aux Belles, Paris, I have applied his tests for estimating the level of intelligence to 200 schoolgirls of Sheffield.

The tests are part of a more extensive examination which has as its object the complete understanding of a child who comes before us, and if they are what their authors hope them to be, they will assist teachers who desire to determine the reasons for the lack of progress of pupils, or to gain knowledge of the intellectual calibre

[1] Abstract of a communication to the Educational Science Section of the British Association at Sheffield, September 2nd, 1910.

of a new pupil. As an example of their nature, I give those employed for children of nine. They are asked:

(i) To give the exact date of the day.

(ii) To enumerate the days of the week.

(iii) To define fork, table, chair, horse, mother (the definitions given are to be superior to "use" definitions).

(iv) To read the following: "Burton-on-Trent, January 6th. Last night a great fire at Burton-on-Trent destroyed three houses situated in the centre of the town. Seventeen families are homeless. The losses exceed £150,000. While saving a child in its cradle, a barber's assistant was seriously burned on the hands"—and after a brief interval to recall at least six facts.

(v) Having before them a heap of money containing £1, 10*s*., 5*s*., 2*s*., 1*s*., 6*d*., 3*d*., 1*d*., ½*d*., and in addition three pence and seven halfpence, to enact the part of a shopkeeper, selling a small article for four halfpence. The purchaser tenders 1*s*. in payment, and change is demanded. Various solutions are possible, the best being the sixpence, the threepenny bit, and one penny.

(vi) Being given five boxes of identical shape and appearance, but 3, 6, 9, 12, 15 grams respectively in weight, to arrange them in order of weight; three attempts are allowed, two of which must be correct.

The investigator on this method deals with the individual, and a little preliminary talk is necessary to ensure confidence. The child's age is then ascertained, and the tests for that age given; should he accomplish all, or all but one, he is adjudged at the level of that age, and is then subjected to *all* the tests of the succeeding ages. If he accomplishes five of these a year is added to his level; if ten, two years. But if the child fail in two or more of the tests appropriate to his own age he is put through the tests of each preceding year in turn until that year is found in which he can accomplish *all* the tests or all but one.

My experience is that one of the greater hindrances to exactitude lies in the investigator; it is impossible to be certain that one has preserved identical tones of voice and expression of face throughout the sittings, and with a subject so susceptible to suggestion as a child the doubt will creep in that the result has thus been vitiated. Then there is the difficulty of estimating the results. Thus one of the tests requires the children to make a sentence containing the words London, River, Fortune. If I allow the construction "London river," M—— C—— (twelve years) is at the twelve level; if I do not allow it she is only at the level of ten years, and since she cannot do five tests superior to that level she must be adjudged backward.

I have found that it is the exception rather than the rule for a child to be able to satisfy the tests for her own age—*e.g.*:

Of	4	children of	6 years	... ...	2 have to go back.
,,	41	,,	,, 7 ,,	... ...	26 have to go back. 9 can do the tests for 8.
,,	22	,,	,, 8 ,,	... ...	15 have to go back. 1 can do the test for 9.
,,	25	,,	,, 9 ,,	... ...	20 have to go back. 5 can do the tests for 10.
,,	37	,,	,, 10 ,,	... ...	23 have to go back. 2 can do the tests for 12.
,,	23	,,	,, 11 ,,	... ...	20 do the tests for 10. 3 can do the tests for 12.
,,	22	,,	,, 12 ,,	... ...	16 have to go back. 1 can do the tests for 15.
,,	20	,,	,, 13 ,,	... ...	16 have to go back. 4 can do the tests for 15.
,,	3	,,	,, 14 ,,	... ...	2 have to go back. 1 does the tests for 15.
,,	3	,,	,, 15 ,, and over	...	2 have to go back. 1 does the tests for 15.

The provision for adding one year for five tests superior to the level reached, or two years for ten, mitigates the severity of this judgment. Thus, of the fifteen children eight years old who had to go back, excluding one in whose case the tests were not completed, only three in the final reckoning are to be adjudged backward.

I have found cases in which girls could satisfy the tests of a superior level, but were unable to satisfy the tests of their own age or of the age immediately preceding it. M. Binet was prepared for such cases, and the child who presents this characteristic is estimated as of the intellectual level of the year at which she fulfils the required number of tests.

OUTDOOR WORK FOR SCHOOLS OF NORMAL TYPE.[1]

By J. EATON FEASEY.

ANXIETY with respect to the physique of school children has led to the multiplication of open-air recovery schools. The value of these schools from the hygienic point of view is beyond question, and their work on the educational side is not unsatisfactory. A danger arises, however, of outdoor educational work being mentally associated with, and practically restricted to, the physically defective. Against this it is urged that an immediate and large increase in the amount of school work in the open air would not only benefit children and teachers physically, but is on educational grounds very desirable for all classes in schools of every type.

At present teachers are largely slaves of the schoolroom and the desk. Outdoor work is restricted to drill and gardening with, in some few schools, an occasional walk or excursion. Things which cannot be done at a desk in a room are looked upon with suspicion as not being the real work of a school. Yet all are aware of the serious harm done to growing children by desks necessarily unsuitable, and of the impossibility of providing well-ventilated rooms and sufficient floor-space. In many districts school accommodation is deficient in nearly all hygienic requisites, and aggravates the harmful influences present in many cottage homes. But the advantages of open-air work are not mainly hygienic, but educational. It is impossible in the class-room to use as we ought the child's natural love of movement and his instinctive restlessness. Outside this characteristic natural activity may be used, and the evils of wrong desk-posture and vitiated atmosphere avoided.

There are difficulties of organisation connected with school journeys and objections to technical instruction in horticulture as a school subject. Whether these are or are not overcome, there is a large amount of work which can and ought to be done outside. The adoption of the asphalted playground has increased facilities in this direction, whilst the provision of school gardens would enormously widen the possibilities of work in the open air in immediate proximity to the school.

There is much work of high educational value which can only be done outside. There are educational methods which can be adopted in the playground and not in the class-room. There is abundance of work which can be more efficiently done in the open air. Lessons in arithmetic, mensuration, and geometry may be given in the playground floor, and the larger available space makes co-operative work possible to the class. This form of

[1] Abstract of a communication to the Educational Science Section of the British Association at Sheffield, September 6th, 1910.

work was recently urged upon rural teachers by the President of the Board of Education.

Children are also given first lessons in heat and light in the open air. Such teaching surely should be taken always outside, the sun being employed rather than a lamp. The biological importance of light and heat can be shown by continued observation and experiment with living growing things in the garden. Experience has also shown the practicability on the school premises of outdoor lessons, on direction, the sundial, shadows, seasons, &c.

But it is with work included under the term "nature-study" that the adoption of outdoor methods is most urgent. It is surely wrong to confine children within doors to discuss snow, rain, wind, dew, sunshine, and plant life. "Blackboard nature-study" is surely an absurdity.

There is a crying need for the multiplication of school gardens, not for technical instruction in horticulture, but for the conduct of real nature-study. The garden should not merely provide the material for, but should be the scene of, the lessons. Illustrations of classes doing such work are shown. Much of this work cannot be done on an excursion. In the garden scholars may carry on prolonged investigations—*e.g.*, into rate of growth. The nature instinct born in a child can be satisfied and developed instead of being obliterated by work in school with a dried or torn-up specimen. The garden offers unlimited scope for teaching the child through his own observation and inference.

Comenius in the seventeenth century urged that every school should have its garden and use it in this way. England is exceedingly backward in this respect as compared with some other countries.

It is not impossible to meet the difficulty of providing gardens for schools in the congested parts of cities. Plots of ground might be laid out in the suburbs and classes conveyed to these garden schools for a half-day each week for outdoor work of various kinds. No plans should be passed for new suburban or rural schools unless a garden is provided, and H.M. inspectors could do much by urging the importance of making playgrounds and gardens the scene of lessons.

The physical and educational value of such work is perhaps exceeded by its æsthetic and moral advantages.

SCHOOL GARDENING.[1]

By ALEX. SUTHERLAND.

MANY claims are made for gardening as a means for interesting and educating children. The claims are that gardening has important intellectual, social, moral, industrial, and æsthetic values. If so, it is the duty of everyone to help in bringing about a larger use of the subject.

About 30¼ square yards, or 60 feet by 27 feet, with central path of 4 feet, was found by the writer to be a suitable area for two boys, one above twelve and the other under. When girls are at sewing, the boys go to gardening. The advantages noted are:

(1) It vivifies school work, stimulating all branches of study.

(2) It gives the subject of nature-study a definite foundation, suggesting problems through which children may be trained to "do something in order to find out something."

(3) It teaches respect for labour, showing the importance of the work of producing vegetables, and of the skill desirable for this fundamental human employment.

(4) It brings the interests of the home and school more into sympathy.

(5) It tends to correct modern pleasure-seeking tendencies, developing interests that furnish means of wholesome pleasures within ourselves.

(6) It expands the mind by the opportunities it gives for observation of various plants of different kinds.

(7) It brings the school into sympathetic association with our most important industry—agriculture—and gives a simple, recreative manual training in handling a spade and other garden tools.

(8) It awakens interests and desires that help in the formation of good habits, and healthy, profitable employment in spare time.

(9) It enhances the usefulness of the citizen by the training towards special interests that he may follow up after school days are over, and help in producing plants—living things of beauty and wonder.

There must be co-operation between pupils and teachers. The practical operations of preparing and cultivating the soil, planting the seed, weeding, &c., devolve on the scholars. Scope for the directive, stimulative, educative influence of the teacher find a field here for securing skill and interest.

Observations on the first appearance of seed leaves, buds, where the buds grow, how they open, visits of bees or other insects, where nectar is stored, colours of flowers, what parts of flowers fall off and what parts remain, weed studies, names and families of garden weeds, bulb culture, planting of bulbs for spring bloom, planting in pots for indoor winter blooming, setting out tulip bed in school grounds—all full of interest, full of instruction, in which help given and help got will ever be a pleasant and profitable experience to all concerned.

[1] Abstract of a communication to the Educational Science Section of the British Association at Sheffield, September 6th, 1910.

HISTORY AND CURRENT EVENTS.

WE are within a hundred years of the end of the second millennium of Christian history. What does the average Englishman know of the history of the first millennium? Between the abrupt ending of the "Acts of the Apostles" and the beginnings of Martin Luther, only a few names stand out, to the modern Protestant Englishman, of the innumerable saints and heroes of the Church to which he professedly belongs and in the past of which he should presumably be interested, even if he omit to glory in it. This year there is being celebrated the thousandth anniversary of the foundation of the Abbey of Cluny, a foundation which was intended to revive the pristine purity of an institution initiated so long before that it had had time to decay—we refer to the order founded at Monte Cassino by St. Benedict about 530. The tenth century was one of many changes. Europe was to be essentially different in the future from what it had been in the past, and, to those who know, the mention of Hildebrand, one of the earliest disciples of Cluny, will suggest what some of those changes were.

BUT if the average Englishman may be excused his ignorance of ancient history, surely he should be better acquainted with that of his own country. Yet, if we may judge from some examination papers we have recently looked through, very few of us know the difference between the Englishmen who sailed in the *Mayflower* and founded New Plymouth and those who followed them to America and founded Boston, Salem, and all that we

know as Massachusetts, Connecticut, &c. "Three years ago President Roosevelt offended New Englanders by confusing the Pilgrims with the Puritans." So we hear from America; but President Taft knows better, and when, last August, he inaugurated the monument at Provincetown, the foundation-stone of which had been laid by his predecessor, and which is intended to commemorate the first anchorage of the *Mayflower* in American waters, he drew the necessary distinction between those who established a colony in which there were no laws on religion and those who established an intolerant theocracy. Ask Roger Williams and the Quakers what they thought of Massachusetts!

Kaiser Wilhelm has again been making Europe "Mark him and write his speeches in their books" by insisting, in the language of the seventeenth and earlier centuries, on the importance of his office. Yet there is much to be said for the boasts of the Hohenzollerns. They have as good a right to regard themselves as "chosen people" as any house in Europe. Their career since the fifteenth century has been one of almost continual success. Burgraves of Nuremberg, Margraves of Brandenburg, and Electors of the Holy Roman Empire; Dukes of, Kings in, and, since 1866, Kings of, Prussia, and finally, though not Emperors of Germany as they wished to be, they are German Emperors. Note their desire to be rulers of a country. As Henry IV. was the first *King of France*, to emphasise his indefeasible hereditary right disputed by the Catholic League, so William I. and Bismarck in 1866 marked their victory over Austria by setting aside the inferior title which the Austrian Emperor had granted in 1701, and, like Henry VIII. of England, taking to himself the title of King, instead of Lord, of Ireland to mark *his* revolt against the Roman Empire and Church, the Hohenzollern proclaimed himself King *of* Prussia.

William II.'s language has been resented because of his claim to Divine Right. We in this country are apt to misunderstand this language, partly because, being ignorant of Prussian history, we are apt to forget that they are still, in many respects, where we were in the seventeenth century, and partly because we do not properly understand the nature and history of this claim of kings to rule by Divine Right. All true leaders of people, whether kings, priests, officers of State, or schoolmasters, should have a high idea of their office (not, therefore, necessarily of themselves and their fitness for such). And the result of such exaltation of their office should be such as was indicated in the, for us, classical statement of the case in King James's "Basilicon Doron." The royal author says there to his son Henry: "God made you a little god to sit on his throne, and rule over other men." But the moral drawn thence is not arrogance, but that it is the king's duty "to know and love God," and "in thankfulness to go far beyond all others." "The highness of your dignity does not diminish your faults, but, on the contrary, your fault shall be aggravated," because it is "an exemplary sin, drawing with it the whole multitude to be guilty of the same." Office brings responsibility.

Goethe, Lyrics and Ballads. Selected and edited by C. E. Wright. 50 pp. (Blackie.) 6d.—Mr. Wright has done his by no means easy task extremely well. His selection is capital; his short biography of Goethe is good; in his notes he observes the right measure between prolixity and incompleteness. The little book is a valuable addition to Messrs. Blackie's "Little German Classics."

ITEMS OF INTEREST

GENERAL.

Secondary education takes a prominent part in the first of the educational supplements published by the *Times* on September 6th. Though the articles were all unsigned, they were evidently written by well-informed authorities with a wide view of educational requirements. Among the subjects dealt with in the special articles may be mentioned "The Educational Outlook: a Review and a Forecast," "School and Workshop," "Humanism and Modern Languages," and "The New Secondary Education." Certainly this first supplement is full of information about education, and if the general public will read and study it the *Times* will have done the nation a great service.

A special meeting of the School Nature-study Union will be held at University College, London, on October 14th, when Dr. C. W. Kimmins will give an address on "The Value of Nature-study in the Schools." All who are interested in this subject are cordially invited to be present.

The last annual report of the Education Committee of the County Council of the West Riding of Yorkshire contains much information of what has been done for secondary education in this area during the past year. During this period a further stage towards the completion of the committee's work in the provision of secondary education has been marked by the opening of new secondary-school buildings in seven different places; in addition, new buildings for eight other schools are in course of erection. Careful attention has been given to the teaching of housecraft to girls in secondary schools, and particularly to its proper correlation with the teaching of science. The committee organised a course for science teachers dealing with the teaching of elementary science to girls upon a domestic basis. These first steps have led to a noticeable change in the handling of both science and domestic subjects in the secondary schools for girls. The committee has also had under consideration the physical status of pupils in attendance at secondary schools. With the view of obtaining accurate information on this point, a set of simple anthropometrical measurements in respect of every pupil in attendance at secondary schools aided by the committee has been obtained. These measurements include height, weight, and chest girth. The schools have been advised to record these measurements regularly, so as to be available for examination when the physical instruction of the school is inspected. The organising masters and mistresses appointed by the committee have continued to visit a number of secondary schools to which they have been allocated, and the services rendered by these teachers continue to be appreciated by the school authorities.

The education authorities at Manchester put in the very front of the new calendar of their Municipal School of Technology a statement of their belief in the need of a sound general education as a preliminary to a course of technical instruction. We hope their example will be copied widely. As their prefatory statement says: "The successful career of a student depends essentially upon his previous general education, for unless this has been thorough and liberal no satisfactory progress can be attained in any of the departments of the school. The power of clear linguistic expression, and the mastery of the elements of mathematics, physics, and descriptive geometry are vital as a means of successful study of the applied sciences. The chief aim of all preparatory study

should, therefore, be the effective training of the thinking and observing faculties. It is impossible for a student to obtain full benefit from the courses of instruction unless there has been adequate previous preparation. Mere interest in experiment, or in machinery in motion, or even evidence of manual skill and dexterity, without a firm grasp of the above-named fundamental subjects, is of small avail if the purpose of the student be to attack serious problems in engineering, physics, or chemistry, and to fit himself for a position of industrial responsibility."

QUEENSLAND, which became a self-governing colony on June 6th, 1859, celebrated its jubilee on December 10th, 1909, by the inauguration of a university. The building, which was formerly Government House, being dedicated for the purpose of the University, only £50,000 was required to be provided for the initial cost. A sum of £10,000 annually has also been voted by Parliament for working charges. It has been decided to establish twenty foundation scholarships, open to all young people without regard to class, creed, or sex, and three special scholarships for chemistry, engineering, and travelling, the value of the first two being £100 a year and of the third £200 a year, all three being tenable for two years. The management of the University is entrusted to a Senate consisting of twenty members. The senators have been appointed, in the first instance, by the Government; medicine, law, and commerce are well represented, and engineering has a representative in the person of an electrical engineer.

THE issue of the *Educational News of South Africa* for July gives a very full account of the twenty-second conference, held last June, of the South African Teachers' Association, which now has a membership of 1,211. The address of the president for the year, Mr. J. Anders, Boys' High School, Malmesbury, Cape Colony, is given at length, and provides an excellent summary of the problems confronting education authorities in South Africa. During the course of his remarks Mr. Anders said: "The treatment English is receiving in certain educational centres gives rise to grave misgivings. Some advocates of a thorough knowledge of both languages strangely enough deprecate English being practised in conversation; English is looked upon as a sort of foreign language. What is the net result? Graduates whose command of the English language, and often of the Dutch language as well, falls short of what might reasonably be expected. It is not infrequent to find just the man weak at English proclaim the doctrine of equal rights the loudest. The cry is becoming louder day by day that English is deteriorating, and one need not go far for proofs. It is pitiable to see teachers, even graduates, stand before a class struggling to get through an ordinary English sentence. It used not to be so; the graduates of 12–15 years ago commanded a good English vocabulary, and many of them occupy prominent positions and are an ornament to the teaching profession. With these many latter-day graduates do not compare favourably. One is often tempted to believe that the glories of bilingualism are, like rhetorical tropes, far more dazzling than enlightening or convincing."

THE September issue of *School Hygiene* is a congress number. It is devoted almost entirely to a special report of the third International Congress on School Hygiene, held in Paris in August, of which we gave an account last month.

SCOTTISH.

THE new Northern District School, Perth, which has been erected at a cost of £20,000, was formally opened by Lord Shaw of Dunfermline. Lord Shaw, who as Lord Advocate had a good deal to do with framing the Education Act of 1908, touched on quite a number of engrossing educational topics in his opening address. He said that in the midst of all their talk as to secondary, technical, and university education they were apt to lose grip of the three "R's." A great many letters reached him in his official capacity, and at least 30 per cent. of these were illegible. For this defect he blamed the school examinations, which ruined the handwriting of the pupils while it was still in the formation stage. Reading was quite as unsatisfactory, and it was rare to find people who could read a piece of prose or poetry with accuracy, distinctness, and expression. The third "R," arithmetic, was being pushed into the background by other and less deserving subjects, though for a large number of people this was the vital subject in the whole curriculum.

THE greater part of Lord Shaw's address was taken up with the question of residential colleges for teachers. He, greatly daring, commented on the coarseness and vulgarity that still existed in the Scottish character, and he looked to a refined and educated body of teachers to lead the way in a new social revolution. To do this teachers themselves required to be trained under better social conditions. The lodging-house system prevalent throughout Scotland was the worst possible for securing social intercourse. It was impossible for the graces of life to flourish in their atmosphere, which was generally sordid and forbidding. In the interests of these students, and in the interests of the nation, Lord Shaw pleaded for the institution of residential colleges in connection with the provincial committees, where spacious, healthy dwellings, orderly habits, good food, the arts and graces of life, and the happiness of social friendships would become part of a dignified and well-ordered existence. While there is a good deal of exaggeration in the picture presented by Lord Shaw of the coarseness of the national character and the hardships of life in lodgings, there will be general sympathy with his plea for residential colleges. "As iron sharpeneth iron, so does man the countenance of his friend," and it is just this refining and polishing element that has always been a-wanting in Scottish universities and normal schools.

NO educational address from Lord Shaw would be complete without a reference to the conspicuous merits of the small school boards. These he has taken under his peculiar care, and on every opportunity he champions their cause and proclaims their virtues, though few are found to say Amen! On this occasion he said that he would not willingly let disappear and die that scheme and system which had resulted in Scotland producing in every locality, from the Shetland Isles to the Solway Firth, men who were devoted to and capable of tackling the question of the education of the youth. Now this picture of devoted and capable men labouring in the cause of education exists nowhere save in Lord Shaw's rich imagination. The fact is that, were it not for a strong and wisely tyrannical Education Department, the smaller educational areas would be twenty years behind their urban compeers. At almost every step of the educational upward march they have had to be driven at the point of the bayonet, and no one should know this better than Lord Shaw, who, in his former official capacity, had so often to play the part of task-master.

Last year the Education Department issued a circular dealing with the duties imposed on school boards in relation to continuation classes by the Education Act of 1905. Before beginning another year's work, the Department has taken the opportunity of reviewing the progress made during last session, and of offering further instructions and suggestions to teachers and managers. Considerable progress has been made in establishing new classes and in improving the organisation of the old. The impossibility of instituting continuation classes in thinly populated rural districts is frankly recognised, and in those cases boards are urged to adapt the supplementary classes of the day school to the needs of adolescents who may be able to attend during the winter months. This is only reverting to a practice that was common in Scotland in earlier days. Managers are urged to work in co-operation with the local employers of labour, who will generally be found willing to make the conditions of labour such as will admit of attendance at continuation classes.

The Education Act of 1908 made provision for the formation of agencies "for collecting and distributing information as to employments open to children on leaving school." The recent establishment of labour exchanges under the Board of Trade, and the difficulty of delimiting the functions of the two bodies, has in most centres rendered inoperative the terms of the Act of 1908. The Department takes occasion in its latest circular to define the spheres of the two agencies. The primary function of the labour exchanges in its view is to bring employers and those seeking employment in contact with one another, and to study the conditions of employment in the districts that they serve. The function of the agencies contemplated by the Education Act is much wider. Their aim is to advise pupils who are completing their elementary education as to the proper course to follow, whether they are going on to secondary education or are leaving school. They should be able to inform pupils as to the general nature of the employments in the district, and the prospects, present and ultimate, in each. The school-board agencies would also have as one of these functions the supervision of young persons leaving school for employment in the district. The importance of thorough co-operation between the labour exchanges and the school-board agencies is emphasised, and the Department apparently practises what it preaches, as the circular has the approval of the Board of Trade.

Intimation has been made that in future the Department proposes, with the assistance of managers and teachers, to obtain information as to the occupations on which pupils enter when they leave school, and to maintain this record as far as possible up to the age of seventeen. By this means it is expected that managers will be able to arrange courses and subjects of instruction best suited to the industrial needs of each district.

IRISH.

A serious difference has arisen between the Department of Technical Instruction and the Dublin technical schools, and the Department has published a letter which it addressed last March to the City of Dublin Technical Instruction Committee explaining the situation. The Department has never regarded the arrangements of the committee as satisfactory, and now that the building of an additional technical school in Bolton Street is approaching completion, it insists on the whole of the technical instruction of the city being placed under the effective administration of an expert director. In 1905 an expert adviser was appointed, but never given proper control, the secretary of the committee being also appointed principal of the schools, but hardly ever being present in the schools when the Department's inspector visited them. Secondly, the accounts of the secretary's office were irregularly kept, and the auditor of the Local Government Board comments on them very adversely. A subcommittee investigated the matter and recommended reforms, together with the dismissal of two clerks. The Technical Instruction Committee refused to accept this report; but later one of the two clerks absconded, was arrested for fraud, and is now in prison. The Department therefore urges a complete reorganisation of the secretary's office, and requests that the secretary confine himself to his proper duties. Unless these two great changes are made no scheme will be approved, and the City of Dublin will lose its grant for technical instruction.

The results of the examinations held by the Board of Intermediate Education were published at the end of August, and are summarised as follows:

Boys.

Grade	Senior	Middle	Junior	Preparatory	Total
Number examined	550	1716	3094	2607	7967
Number who passed:					
With honours	152	273	357	—	782
Without honours ...	181	507	1392	1416	3496
Total	333	780	1749	1416	4278
Proportion per cent. of those examined who passed	60·5	45·5	56·5	54·3	53·7

Girls.

Grade	Senior	Middle	Junior	Preparatory	Total
Number examined	259	817	1749	1108	3933
Number who passed:					
With honours	69	141	141	—	351
Without honours ...	110	291	776	588	1765
Total	179	432	917	588	2116
Proportion per cent. of those examined who passed	69·1	52·9	52·4	53·1	53·8

The total number examined, 11,900, is a record for the present system; there were more boys examined in 1907, viz., 8,165, but the total of girls shows an increase of nearly 300 on any previous year. The total number of passes, 6,394, is slightly in excess of last year, when it was 6,271, but is less than in any of the four preceding years, and the percentage of passes is the lowest recorded under the present system. Last year it was 55·5 for boys and 55 for girls, the total being 55·3. In every grade, both boys and girls (except in the girls' middle grade), the percentage is lower, and it is discouraging to note that the percentage shows an almost regular decline since 1900, the first year of the new system, when it was 69·8. The standard of the examination has therefore seriously risen, thus disappointing the hopes which were entertained ten years ago, when the promise was held out of an examination which the ordinary candidate might reasonably expect to pass. Now the pupil of average ability

has only a poor chance of passing, and the results do not encourage, but discourage, him in pursuit of education. This state of things is almost entirely due to the severity of the standard in languages, not in mathematics or science.

IN continuance of the policy adopted at the examinations last June, no awards are printed in the official lists for students who failed to present themselves for examination in subjects sufficient for passing the examination.

THE Commissioners announce that next year separate papers will be set in arithmetic and in algebra, but the same paper will be set in each grade for both pass and honours. The programme does not contain any course in natural philosophy, and consequently no examination will be held in that subject.

THE annual report of the Commissioners of National Education in Ireland for 1909 was issued at the end of August. It reports as a pleasing feature that the average daily attendance in national schools has risen from 69·8 in 1908 to 71·1 in 1909, the highest figure yet reached in Ireland. The Commissioners are very severe on the Lords of the Treasury in reference to building grants. The Treasury is extremely parsimonious in this matter, and since last November no building grants have been made, and it is impossible to say how much longer this serious crisis will continue; 130 cases for the erection of new school houses have, however, been approved, 106 other applications still under investigation have been made, there are further fully 600 other cases of unsuitable school buildings where the managers have not yet made application for grants, and there are between 2,000 and 3,000 cases where much needed improvements are required. This work is all brought to a standstill. The Treasury refuses also to make grants to institute higher grade national schools such as form a most important feature of English and Scotch education; it disallows instruction in gardening, although agriculture is Ireland's chief industry; and it has done nothing at present towards providing an annual grant to cover one-half the cost of heating and cleansing the national schools, the managers providing the other half, although the Government has approved this scheme.

WELSH.

AT a meeting of the Cymmrodorion section of the National Eisteddfod at Colwyn Bay, Mr. W. J. Evans opened up the important subject of the after-careers of students in the county schools and University of Wales. He said it was a common grievance that too many of the boys educated in the county schools became teachers and preachers, to the exclusion of other and better-paid occupations, such as the Civil Service. The Welsh intermediate schools were essentially the schools of the people. Out of 13,760 pupils in the Welsh county schools during the year 1908–9, 11,735, or more than 85 per cent., came from public elementary schools. The general inexperience and want of knowledge of life's possibilities on the part of the class of parents whose children attended the Welsh county schools made the establishment of an employment and advisory bureau a matter of special necessity in Wales.

MR. EVANS suggested the formation of a central advisory council, in which the educational element should predominate, but which should include a good representation of Welsh business men in close touch with the labour exchanges and the commercial world. A proper deed of trust should be prepared to contain all provisions which the advisory council should think appropriate for the furtherance of the scheme for collecting information and giving advice for securing employment. The advisory council would generally supervise and direct the policy of the proposed bureau.

A SUM of well over £200,000 is spent annually on the education of the boys and girls in Welsh intermediate schools. The sum estimated as necessary for the purposes of a bureau was put by Mr. Evans at £2,000, or less than 1 per cent. of the money spent on working the schools, and "it would be a poor business man who would not spend 1 per cent. in finding a market for his wares." If each pupil in attendance paid 1*s.* 6*d.* a year towards the expenses of the bureau, about £1,000 would be provided, and the Treasury should be asked to provide one-half of the sum thus contributed by the parents; the remaining amount might be obtained from the University Colleges of Wales and the county and borough education authorities in Wales. Finally, Mr. Evans suggested their watchword should be, "not Wales for the Welsh, but the world for the Welsh."

ONE of the speakers afterwards referred to what he termed a "gross injustice" to secondary-school teachers in Wales. He said that teachers, in order to obtain an appointment in a county school in Wales, had to pay a commission to a London agent of at least 2½ per cent., often much more. The chairman (Sir Herbert Roberts) in his opening speech remarked that every year there are 2,000 appointments open in the second-class division of the Civil Service and 100 in the first class, and directed attention to the fact that a conference was recently convened in London at which a provisional executive committee was appointed the function of which would be to supply to the headmasters of all schools and the University Colleges of Wales full information as to the Civil Service examinations. He was not without hope that students from the University Colleges would be able to obtain some of what might be called the chief prizes of administration in the foreign service.

THE annual meetings of the Welsh Bibliographical Society were held also at Colwyn Bay at the time of the National Eisteddfod. Mr. John Ballinger, chief librarian of the Welsh National Library, read a paper in which he explained how, by the Copyright Act, five libraries in the United Kingdom can demand a copy of every new book published, viz., the British Museum, the Bodleian Library at Oxford, the University Library at Cambridge, the Advocates' Library at Edinburgh, and Trinity College Library, Dublin. This privilege has never been extended to any library in the Principality of Wales, and until last year no sum of money had ever been received by Wales from State funds towards a library. Mr. Ballinger further pointed out that the National Library is designed to supply the means of higher education within the Principality and the furtherance of literary and scientific research, while the geographical difficulties of Wales might be met under the clause which allows the erection and circulation of duplicate collections. Whilst it will be impossible to lend manuscripts and very rare books, Mr. Ballinger suggested that it may be practicable to arrange for the circulation of reproductions of those rarities most likely to be useful to teachers and students. With regard to the circulation of duplicates of printed books, Mr. Ballinger observed that this part of the National Library work will be carried out in the most liberal way that the charter will allow.

RECENT SCHOOL BOOKS AND APPARATUS.

Classics.

Cicero: Select Letters and Extracts. By A. R. Cumming. With Vocabulary. vi+154 pp. (Arnold.) 2*s.* 6*d.*—This is one of those books that make one despair: so much labour spent, so much care taken, to do the work which the teacher and pupil together ought to do. Here is an elaborate life of Cicero, and a chronological table: a short essay on the style (6 pp.); a syntax summary (15 pp.), to which the reader is referred by footnotes to every letter; notes at the end, with more references to the summary, questions in Latin, and exercises; a vocabulary. What is there left for the reader's intelligence? He need not even ask what wants explanation: that is told him by a reference-number, and below he is told exactly where to find the explanation. Why not say simply every time, This is *qui* causal, or This is the ablative of instrument? The Latin questions are, we suppose, a sop to the reformers; but we can say with confidence that this is the last book they would choose. The reader is even told what each letter is about before he begins. We can recommend this book to an incompetent teacher who wants to get it up before taking the text in class; but he must get another text for his boys if he wants to educate them.

Ovid, Heroides I.–X. Text and Notes. Edited by A. J. F. Collins and B. J. Hayes. (Clive.) 3*s.* 6*d.*—These notes are open to the usual criticisms: too much translation, too much elementary grammar, nothing but dry bones. They are meant, doubtless, for persons working alone. A hoary mistake appears in iii. 19: "I feared I might not be caught" is in Latin *timebam ne non caperer*, not *timebam ut*. We have not noticed others in need of correction.

Supplementary Exercises on Ora Maritima. By M. L. Stafford Smith. vi+56 pp. (Swan Sonnenschein.) 1*s.*—This book contains five English sentences on each exercise to be translated into Latin, and lists of words for learning by heart. It will probably be found useful for revision with young pupils. We should have thought, however, that if the book were necessary, there should have been more numerous sentences. Those that are here are all simple and satisfactory.

Homer, Iliad XI. and XII. Translated by E. H. Blakeney. 277–352 pp. (Bell.) 1*s.*—This is a separate print of part of the "Iliad" translation which we have already noticed.

A second edition is before us of "Advanced Latin Unseens," by H. J. Maidment and T. R. Mills (Clive, 3*s.* 6*d.*), with an additional Part V. of tougher pieces than are usually set as unseens.

English.

English Composition. With Chapters on Précis Writing, Prosody, and Style. By W. Murison. x+396 pp. (Cambridge University Press.) 3*s.* 6*d.* net.—Mr. Murison's book is the outcome of his wide teaching experience. It is one of the soundest books on the subject we have seen for a long time. The arrangement is a model of clearness and comprehensiveness. Without irritating the reader by that elaborate but unreal technique so dear to American writers on rhetoric, it is essentially scholarly, and any class that studies it systematically will receive a splendid training in literary expression. The treatment of the essay appears to us singularly good; here, as indeed throughout the book, practice and precept go hand in hand. It is a great pleasure to be able to recommend a book on English composition so unreservedly.

Stormonth's Handy School Dictionary. Revised and enlarged. 257 pp. (Blackwood.) 1*s.*—This dictionary is too well known in schools to need more than a reference to its revision. It is surely one of the best "shillingsworths" on the market. But the human eyesight is worth more than shillings; if only the same good paper could be used for equally good but *larger* type, we should have an easier conscience in recommending the book.

Dictation Exercises from Standard Authors. By R. Wenlock. viii+146 pp. (Macmillan.) 2*s.* 6*d.*—The principle on which this book is based is the entirely sound one of "prepared" dictation. The selections are more suitable for their purpose than the "standard authors" of the title might lead us to expect. The editor provides also a capable introduction under three useful headings: notes on spelling; how to conduct a dictation lesson; and hints on handwriting. The insertion of poetical passages for transcription is an excellent idea. The addition of examination tests, recent examination papers, and a list of difficult and unfamiliar words, with meanings and pronunciation, proves that the editor has done his work thoroughly. The book should find a ready welcome. In the next edition could the pronunciation be given in phonetic script?

The Junior, the Intermediate, and the Senior Book of Paraphrase (24, 32, and 56 pp. (Meiklejohn and Holden), 2*d.*, 3*d.*, and 4*d.*) have been arranged by J. Pendlebury for Prof. Meiklejohn's well-known series. They are meant for elementary schools, and we are rather surprised to find that prose finds no place in them. Some of the passages in the Senior Book would be suitable for an ordinary fifth form in a secondary school. Like a very large number of school text-books, these seem to owe their existence to an ineradicable belief in the class teacher's lack of initiative.

History.

Junior British History Notes. Part III. By W. Edwards. viii+129 pp. (Rivingtons.) 1*s.* net.—A continuation (the paging runs on) of the parts of this little work noticed previously; and it extends from 1660 to 1783. It maintains the same high level of thorough and careful work; but Charles VI. did not form a *Dutch* East India Company (p. 340), Frederick II. did not become *King* of Silesia (p. 344), and Holland did not declare war in 1780 (p. 369). These can easily be rectified in a new edition.

The Dawn of British History. By Alice Corkran. 248 pp. *The Birth of England.* By E. Ross. 255 pp. (Harrap.) 1*s.* 6*d.* each.—These two ladies have read the best modern books on our early history, and some at least of the chronicles, and they are determined, at any cost, to make the years extending from Pytheas to the Battle of Hastings interesting to young readers. They have therefore given their imaginations full play, and when the authorities fail have used the arts of the novelist. Their books read like talk, and have the advantages and disadvantages of the method. The story glides along, and the construction is not always of the best. Pronouns sometimes have no antecedent nouns. But we should think the books would please young children. The pictures, if not always of the best or fully explained, will help the readers to understand the outward aspects of early life.

Lion Heart. By H. Strang and R. Stead. 160 pp. (Frowde; Hodder and Stoughton.) 1*s.*—In the same delightful method as in previous books, the authors mix

the powder of Richard I.'s reign with the jam of the story of two boys whose homes are on the Welsh border, and who have dealings with Richard, with John, and the nobles who ruled England during Richard's crusade. They take occasion, incidentally, to contradict the "Blondel" legend (for which we are thankful), and give at the end ten pages of notes and general summary.

Science and Technology.

A Bush Calendar. By Amy E. Mack. 110 pp. (Australian Book Co., 21, Warwick Lane, London, E.C.) 3*s.* 6*d.* net.—In these charming sketches of wild nature in the bush around Sydney there is a quality which irresistibly recalls some of the best work of Richard Jefferies, and those to whom his "Pageant of Summer" appeals may order this book with full confidence of satisfaction. Only in this case the record is one of flower and bird life from August, when "according to the official calendar it is still winter," through January with its "hot winds and bush fires," to the end of chilly June; while the names of many of the creatures described are as unknown to the English reader as the jabberwock and borrogrove of Lewis Carroll. The many excellent photographs provided soon, however, familiarise the reader with the appearance of the bush and its denizens. It is altogether a delightful book.

A Primer of School Gardening. By M. Agar. viii + 135 pp. (Philip.) 2*s.* net.—Few expert gardeners realise how entirely ignorant the ordinary town-dweller is of their craft. It has thus come about that some admirable manuals on school gardening are to a great extent unintelligible to the persons to whom they ought to have been most useful—the town-bred teachers called upon to organise educational gardening for pupils in urban schools. Miss Agar's primer does not suffer from this defect. It assumes no previous experience or knowledge, is extremely elementary, and deals with difficulties actually met with in practice. The point of view of the teacher of school gardening ought to be very different from that of the practical gardener, since the results aimed at are by no means identical, and this important distinction is evidently recognised clearly by the author. The book deserves a wide circulation.

In the Garden. By J. Eaton Feasey. 140 pp. (Pitman.) 2*s.*—"Given a school garden, how to use it to the best advantage for work in nature-study" appears to be the problem Mr. Feasey has set himself to solve. His book is thus concerned not with the culture of the plants under consideration, but with a few of the lessons to be learnt from them when grown. In addition, he gives outline lessons on a number of other subjects which may be studied conveniently in the garden. The book is very practical in character, and will be welcomed by many readers.

Art.

The Menpes Series of Great Masters. (Black.)—To those who believe in the moral and educational influence of good pictures on the minds of children, additions to the Menpes Series of Great Masters are always welcome. Messrs. Black have published nine more of the large series and twenty-three more of the smaller size; and to enable teachers to avail themselves of these excellently reproduced masterpieces, special prices for schools have been arranged—*i.e.*, 8*s.* 6*d.* for the large size and 5*s.* 6*d.* for the small. A few words of explanation from the understanding teacher will arouse in the minds of the pupils an appreciation of true art, while from the decorative point of view the pictures will be delightful additions to the schoolroom.

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 Value of Colonial Degrees.

IN your issue for July, which has just reached me, you refer to some questions affecting the organisation of the University of New Zealand, and unintentionally do an injustice to many universities in Australia and Canada, where the value of the best university education is appreciated as highly as in England itself. Whether or not the time has come for some considerable strengthening of the University of New Zealand, and for some radical changes in its constitution, it is not for me to say; but it is strange to find your columns supporting a method of examining students in which the examiners and students are as far as the poles asunder, and the teacher has no share. The valuable articles which Prof. Bryan has recently communicated to your paper have made it perfectly clear that such a system is bound to encourage all the worst evils of cramming; and if the University of New Zealand is not the last purely examining university in the Empire, it certainly belongs to a rapidly vanishing type.

However, the remarks to which I feel bound to direct your attention, and against the injustice of which I must protest, are the sentences in which you state that "it is natural that colonial degrees do not carry the same weight as those conferred by one of the universities of the homeland. The only cure is a raising of the standard."

Now it is no doubt perfectly true that the average Englishman is almost completely ignorant of the life which is lived in these parts of the Empire across the seas, and for that reason no mistake regarding our climate and manners, our colour and customs, our schools and universities, would surprise us. But one had been led to believe that the colonies had been brought closer to the mother country in recent years, and that, in the matter of education, the men who have gone out each year from the larger colonial universities as research students and graduate scholars had made our work more widely known among those interested in these questions. All Canada is not given over to growing wheat; and among the Canadian universities there are some the achievement and equipment of which many of the universities of the homeland might well envy. McGill University, Montreal, and the University of Toronto are two which will at once occur to the mind. While, so far as the larger Australian universities are concerned, I can say without the least hesitation that the statement in the second sentence I have quoted above is quite contrary to the facts.

In the opinion of the writer in your columns, the proper cure for the undervaluing of the degrees of the colonial universities is a raising of the standard. Granting that they are undervalued—though of the truth of this assumption I am not certain—I venture to suggest that the proper cure is that those who guide public opinion in matters of education should know more about the different universities and what they are able to do for the countries in which they are placed.

The University of Sydney and other Australian universities do not need to raise the standard of their degrees to make them equal to the universities at home. And in

saying this I am no special pleader for my own university or any other. I write with some intimate knowledge of the universities at home in which I have studied, examined, and taught, and I have been long enough in Australia to have learnt what our universities are doing and have done. Certainly the Universities of Sydney, Melbourne, and Adelaide started from small beginnings, as even now the University of Queensland will do; but even in their earliest years they guarded jealously their trust. When they could teach only a few of the subjects of a university education they held fast to a high standard in those which were chosen, and they were fortunate in the men who laid the foundation of university work in this new land. Nor have these universities stood still.

The University of Sydney began its work in 1852 with three professors—whose names will always be honoured in New South Wales—and twenty-four students. Its endowment was £5,000. In 1910 it has eighteen professors, five assistant-professors, more than eighty lecturers and demonstrators, and above 1,200 students. Its annual income is now more than £55,000. Its splendid buildings are the gift of the Government, which still spends liberally upon their upkeep and extension. Indeed, between the years 1900 and 1909 the grants for these purposes have exceeded £188,000.

The University of Melbourne is but three years younger. Its career has been equally encouraging, and its influence no less far-reaching. With a staff of fifteen professors and more than fifty lecturers and demonstrators, its students now number more than 800, and its annual income is above £45,000.

And if the University of Adelaide is smaller, it by no means follows that its work is less important or its degrees less valuable. It too has a record on which we look back with pride.

As to the University of Tasmania, probably most people would agree that the State by which it was created would have acted more wisely if it had waited until it was able more adequately to support such an institution. On the other hand, the university which Queensland has just founded can rely upon the support of some of the best secondary schools in Australia, and as the years pass it will no doubt be still more liberally endowed by the flourishing northern State.

Naturally, no one would suggest that the work of our universities can lay claim to equality with what is best in the great English universities. We are well aware of what it means to our students to be able after graduation to enter these universities and work, under the stimulus of many kindred minds, with the great men they can find there in such numbers. But we are entitled to a just recognition of the work which the best colonial universities, according to their different powers, are able to do; and the service which they are rendering to the cause of higher education, to the professions, to science and research, should be placed upon the same level as that of the English and Scottish universities organised in the same way.

H. S. Carslaw.

The University, Sydney, August 5th, 1910.

[We are glad to print Prof. Carslaw's able statement of the value of the work accomplished by Australian universities and the degrees conferred. No doubt there is much misconception in England as to the character and standing of colonial universities, but it is only fair to ourselves to say that the note which has evoked Prof. Carslaw's letter came from a contributor in New Zealand familiar with local conditions.—Eds.]

A Method of Finding the Common Logarithm of a Fraction.

The logarithms of fractions of the type *a.b.c.d/f.e* can be obtained directly in *one* addition sum, if we remember:

(1) That every figure in a logarithm is a *coefficient* of some power of ten.

(2) That these coefficients in the logarithms of the denominator may be regarded as affected with the sign *minus*, and those in the logarithms of the numerator with the sign *plus*.

(3) That the mantissa must *finally*, as usual, be positive. Suppose the numbers (here indicated by letters) and their logarithms to be set out as below: a horizontal line may be drawn between *d* and *e* as a reminder of (2). Add up the columns, beginning at row *f*, column −4.

Nos.	0. − 1. − 2. − 3. − 4. logs.					No. of column, also see (1). The successive total-, figure by figure, are for:
a	1 ·	3	7	6	2	
b	$\bar{1}$ ·	4	3	5	9	Column −4. −6, −11, −6, +1, +10, +12, put down 2 and carry +1.
c	$\bar{1}$ ·	5	8	6	7	Column −3. +1, −8, −11, −4, +2, +7, +13, put down 3 and carry +1.
d	1 ·	2	3	7	5	Column −2. +1, −1, −8, −5, +3, +6, +13, put down 3 and carry +1.
e	1 ·	2	7	3	5	Column −1. +1, −3, −5, −3, +2, +6, +9. put down 9.
	$\bar{3}$ ·	4	2	9	6	Column 0. +3, +2, +3, +2, +1, +2, put down 2.
	2 ·	9	3	3	2	

To get examples of negative results, in the final additions, suppose the fraction to be inverted, and the work set out as below: a horizontal line may this time be drawn between *f* and *a*.

Nos.	0. − 1. − 2. − 3. − 4. logs.					No. of column, also see (1).
e	1 ·	2	7	3	5	The totals this time are:
	$\bar{3}$ ·	4	2	9	6	Column −4. −12 convert to −20+8, put down +8 and carry −2.
a	1 ·	3	7	6	2	
b	$\bar{1}$ ·	4	3	5	9	Column −3. −14 convert to −20+6, put down +6 and carry −2.
c	1 ·	5	8	6	7	Column −2. −14. As for last column.
d	1 ·	2	3	7	5	Column −1. −10, *i.e.*, −10+0, put down 0 and carry −1.
	$\bar{3}$ ·	0	6	6	8	Column 0. $\bar{3}$.

The work could be much shortened by deleting terms which cancel.

Thomas Merrick.

Newcastle-upon-Tyne.

The School World.

A Monthly Magazine of Educational Work and Progress.

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The School World

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LONDON'S UNEMPLOYED TEACHERS.

OF some 950 students who completed their course of training at the various training colleges of the London County Council in July of this year, it appears that only 10 per cent. have been placed on what is called "The College List." Students who leave college without being placed upon this list are not permitted even to apply for posts in the L.C.C. elementary schools. It follows that 90 per cent. of this year's ex-students are not permitted to seek for posts under the authority that trained them. The alternative is to apply for appointments in the country. It seems, however, that the provinces are sufficiently well supplied with teachers, and the London ex-students are left without employment. Naturally they are dissatisfied, and have taken practical measures to bring their case before the public. The various statements issued from the Holborn offices of the Joint Council of Ex-Students of Training Colleges for Teachers are very effective. It cannot be denied that they make out a good case, but it would be well that one or two weak arguments were given up, if only to strengthen those that are really valid.

It is unfair to argue that there is any breach of faith in connection with the action of the London County Council. Before these students entered the training colleges it was made known by printed statements and otherwise that the Council undertook no responsibility whatever in the matter of providing employment for them after the completion of their course. The students entered the colleges with their eyes open. The argument that they were lured into the profession by generous bursaries and grants will hardly rouse much sympathy. That a boy or girl has been given an excellent general education up to the age of eighteen seems hardly a ground of complaint, if at that age the pupil is at perfect liberty to go on to a training college or to go into any other profession that appears preferable.

It has been frequently pointed out that there are two ways of securing a good supply of teachers. One is to subsidise the teachers at the beginning of their career, and then pay them rather poorly when they are qualified; the other is to pay the fully qualified teacher as well as other professional men are paid, and make him qualify himself at his own expense. Hitherto the first method has been adopted in the elementary-school system. If the elementary teachers as a body came from the well-to-do classes, it would be idle to complain that at eighteen the young person who had received an excellent education at the public expense was met at the training colleges with conditions to which he could not agree. All he would have to do would be to transfer his talents and attainments to some other and more lucrative profession. But, as the ex-students point out, their ranks are recruited mainly from the working classes, and the home resources have been usually strained to the uttermost to bring them to the eighteen-year-old stage. If they cannot go on then to a scholarship at college, they must give up all hope of a profession, and become clerks or shopkeepers or typists.

The ex-students have a complaint against two public bodies. They charge the Board of Education with, on one hand, fostering the training of teachers, and, on the other, maintaining such regulations as make it impossible for large numbers of the teachers thus trained to obtain appointments. They maintain that at present close on 1,200 recently trained teachers are unable to get posts in schools, and that many of these, in desperation, have been reduced to undertake more or less menial, or at any rate unskilled, work. It appears that there are nearly 19,000 teachers in the public elementary schools of the country who have no qualification of any kind for their work, beyond, as is grimly remarked, being over eighteen years of age and vaccinated. There are, in addition, something over 40,000 teachers in those schools who are neither trained nor certificated. Public complaints have been frequently made about employing these two classes of teachers, but the reply of the Board of Education has always been that there were not enough trained teachers to supply the demands of the schools. Now that a surplusage of trained teachers has been placed on the market, it seems only reasonable that no further appointments of uncertificated teachers should be permitted by the Board of Education until the available trained teachers have been placed. The ex-students must remember, of course, that the Board of Education

is not a teachers' trade union. But they make no unreasonable demand when they say that the Board should either cease to train so many teachers or make such regulations as shall secure that trained teachers have a preference.

The Board seems to adopt the somewhat heartless view that teachers should be prepared to wait for at least a year after leaving training college before they need expect an appointment. But the ex-students reply that their case is not comparable with that of the barrister or the doctor. The long delay in money-earning incident to these two professions is part of the initial cost of training that prevents the working classes from attempting to make their children lawyers or doctors. We might have had some diffidence in mentioning this social distinction had not the ex-students themselves made it an essential part of their argument. As against the Board of Education they have made out an excellent case.

When it comes to the turn of the local education authority we must at least recognise, as we are not quite sure that the ex-students do, that the Education Committee of the London County Council is acting on principles that will at least bear investigation. To begin with, it sets out with the laudable purpose of getting the very best teachers for London. Here every London ratepayer must be with them. If the attraction of London is so great that it draws the best teachers from the provinces, London would be foolish indeed not to profit by the fact. Further, the London County Council may argue that it wishes to set up a circulation of teachers between the capital and the provinces. It may say that it is good for the London born and trained teacher to have to go to the provinces, and particularly to the country, for a year or two, and if he wins his spurs there, then to return to his native city with broadened views and widened experience. The trouble is that this circulation does not occur. The drift is all in the one direction. The country does not want the London-trained teacher who is not good enough to obtain a place in his own area. However innocently, the London County Council has branded 90 per cent. of its own students as unfit. It may be argued that it is silly of any provincial authority to take this view, and we agree. But we know human nature, and we are not surprised at what takes place.

It has been asserted that the ex-students are teachers, and, unfortunately, many of them have our sympathy. But it is one thing to be unwilling to leave and another to refuse to leave. The ex-students have produced plenty of evidence that they are prepared to go to any authority who will give them the terms usually offered to trained teachers, and, unfortunately, many of them have gone to authorities who do not give such terms. The most telling argument of the London ex-students is that they are able to say that they have "supplied every education authority in the country with a list of the 800 unemployed London teachers, with a view to employment. And though all of them have replied courteously, yet *from the majority* comes the reply that preference is given to locally trained students." If the words that we italicise can be justified, the ex-students have made out their case. Free trade in London and protection for the provinces effectually stops the circulation.

This provincial protection also discredits another excellent principle adopted by the London County Council. It is aware that it is producing more teachers than it has any intention of using, but it has a reason for what appears to the ex-student as mere perverseness. The idea is that each part of the country should do its share of training teachers, and should "put into circulation" each year as many teachers as it is likely itself to withdraw from that circulation. Situated as London is, it could depend upon drawing from the provinces as many teachers as it requires, without having to train a single one for itself. But this the County Council feels would not be fair to the provinces. Nor would it be fair, it believes, to Londoners. If this plan were adopted, no London parent would have a chance of putting his children into what, after all, is a rather desirable profession if we consider the difficulties of preparing for any of the others. Granted that the circulation works all right, it is an excellent thing for the London County Council to see that Londoners get a chance for their children. But as things are working out the scheme is proving disastrous for the Londoner. There has been no suggestion that the London-trained teacher is in any way inferior to his fellows who have been trained in the provinces. The coins are quite good—only they cannot get into circulation.

It is manifest that the present mode of selection of teachers for the London area cannot be maintained. By some means or other the London-trained teacher must get fair play. Why not throw open all appointments to the whole country? The competition would be very keen, but the London students must be prepared to hold their own, and be content to give place when better candidates come forward. It may be contended with some show of reason that if the other local authorities give a preference for students of their own training, the London authority might well do the same. But the exceptional position of London must be taken into account. The capital is entitled to all the advantages that flow from its special attractiveness for young men and women. The London students have no real cause of complaint if, in fair competition, they are beaten by better students from the provinces.

The fear is sometimes expressed that in a perfectly open field London students would be able to bring a certain amount of influence to bear on appointing committees through relatives and friends. But even as things stand there is this possibility, since, after all, the appointments are made by the school managers, though the choice has to be made from "The College List." Besides, this local influence would be more diffi-

cult to secure in London than in the smaller areas of the provincial authorities. To meet the danger of relatively incompetent persons being appointed—though it has to be remembered that *all* certificated trained teachers are guaranteed by the Board of Education to be efficient teachers—it could be quite easily arranged that all intending candidates for appointment under the London County Council should present themselves before a committee representing the Council, and made up mainly of the Council's inspectors with an experienced teacher or two, and a couple of members of the Council to keep matters straight. This committee could meet once a month or once a quarter, as was found necessary, and at each meeting determine which of the proposed candidates should be accepted as suitable for service under the Council. The result would be an enormously increased list of eligible candidates, only instead of being a College List it would include candidates of all degrees of experience. Every person on this list should be eligible for appointment by any board of managers under the Council, and no teacher not on this list should be thus eligible. If thought desirable, a regulation might be made by which the name of any candidate not appointed after a certain period—say three years—should be automatically removed from the list. The details could be easily arranged, and the result would be a perfectly open competition for posts, with the guarantee that every person appointed had already satisfied the Council's requirements.

THE RELATIONS BETWEEN GOVERNING BODIES AND HEADMASTERS.

By J. T. PHILLIPSON, M.A. (Cantab.),
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THE Education Act of 1902 has called into being what may almost be termed a new type of secondary school. In every part of the country there are—built or building, or in contemplation—schools which, while they are neither grammar schools, nor "Cockerton" schools, nor high schools, nor the "middle" and "modern" varieties of our boyhood, yet partake of the nature of each and all of them. The Act has also made it possible for the local authorities to assist or take over many grammar schools and other institutions of honourable antecedents but slender means, and adapt them to a like purpose. The scheme for the constitution and administration of these schools is the same, broadly speaking, throughout the land. Except in the case of county boroughs, the governing body of the school is appointed in about equal proportions by the "local authority," to wit, the county council, and by the local council.

Now the *personnel* of the governing body is a matter of much importance to the school. Between the governors of one of the great public schools and the managers of an elementary school there is a wide difference. That is not to say that one body is to be preferred to the other for the purpose for which it is appointed. Each, no doubt, performs its functions admirably; if they were interchanged, each would no doubt be out of place.

In the case of the primary schools it is perhaps better that the management should be in the hands of the education committees of the county, borough, or district councils, than in those of persons appointed *ad hoc* by the community. Neither system gives any guarantee that the control will be in the hands of persons of experience in education, but the former does at all events go some distance in the direction of securing men of good business capacity, with a practical knowledge of the elemental needs of their own district. It is sometimes the case, unfortunately, that the town (or other) council becomes filled with an undesirable type of individual. Who has not heard the remark, "No decent man would think of standing for the council"? Though this state of affairs is, happily, the exception, it nevertheless demonstrates a danger to which at least the smaller councils are liable: the inclusion of men of narrow outlook, of cantankerous disposition, men perhaps with an inferior sense of equity, or with axes to grind. And if the councils are liable to this danger, then the education committees are also liable, and the schools in turn will suffer from their influence.

What of the governing bodies of the transformed and the new schools of the Act of 1902? It is, of course, impossible for any single writer to dogmatise upon such a point: the necessary information is not available. But the experience of the past eight years makes it possible to indicate, with some confidence, some of the tendencies which should be avoided or cultivated.

In the earlier days there appeared to be a danger that the methods of the old School Board were to be extended, *mutatis mutandis*, to the new secondary schools. Men whose own school training had been exiguous, or perhaps gained in inferior schools, and whose subsequent educational experience was confined to School-Boardism, were deemed to be not unfitted to control the destinies of the secondary school. Such individuals are liable to be, and sometimes are, a thorn in the flesh of the headmaster and his staff, either in the way of censorious interference, or by impracticable suggestion. It would appear that Time, the healer of all things, is likely to eliminate this class of man from the governing bodies. The Board of Education has shown, in a hundred ways, its anxiety that the secondary schools under its care should assimilate the spirit and tone of the great public schools. The wisdom of this attitude is assuredly not open to question. Now, even as the teacher should teach out of abundant knowledge, so we may safely assert that the governor should govern out of abounding sympathy with this ideal. He should be a man of liberal education and wide sympathies, one who understands that, however great our shortcomings may be so far as methods are concerned, we Saxons have at least caught the trick of turning out men;

and one who understands from his own experience how it is done.

Exactly to define the functions of governing bodies would be a difficult matter, and indeed it is far better that no such definition should be attempted. Certain matters undoubtedly come within their sphere, and other matters as certainly do not. Between these there is a wide area which may be described as the domain of benevolent watchfulness. Structural improvements and developments, finance, broad outlines of policy are clearly theirs to determine. On the other hand, the administration of the school is the affair of the headmaster, who has been elected for that very purpose, and should have a free hand as the responsible person. At the opening of a certain county secondary school a few years ago the Right Hon. Augustine Birrell, then Minister for Education, told the newly elected governors that the headmaster should be captain on his own quarter-deck. No educationist worthy the name will question the rightness of this dictum. It breathes, in fact, the very genius of our race. We want authority, we want law, but we cannot brook interference. In a series of brilliant essays, recently published by an American,[1] the writer states of our forefathers, "They wanted independence on their own estates, and they wanted not to be meddled with." That was true a thousand years ago, and it is true to-day, true in every walk of life, and not least in our schools.

The undefined nature of the relations subsisting —within certain limits—between the governing body and the headmaster constitutes the real value of the system. It is a safety valve. In many respects the governors act as the eyes and ears of the management. They live, most of them, in the neighbourhood; they are on friendly terms with the headmaster. In this way, many matters may be discussed in an informal way which could not profitably appear on the *agenda* of a meeting. A wise headmaster and a wise governor may be trusted not to abuse such intercourse. Indeed, if on either side there is any misgiving as to the tactfulness of the other, such intercourse is not in the least likely to take place.

In particular, it is essential to the successful working of these relations that the chairman should be in close touch with the headmaster. It is not too much to say that on the choice of a suitable chairman depends the success or failure of the scheme. To begin with, it is a commonplace that an executive committee takes its tone from its chairman. That is in itself a sufficiently important consideration, but it is only one out of many aspects of a chairman's usefulness. He should reside in the neighbourhood of the school. He should be a member of the education committee of the local authority. He should be one who can make his presence felt at the meetings of the education committee. He should be a personage in his own district, and a man of sufficient leisure to look upon his office as a hobby. If these conditions are fulfilled, and the man in question is strong without being managing, friendly yet not intrusive, possessed of tact but devoid of squeamishness, one who will not admit defeat and yet knows how to give way gracefully—then the school has an asset of enormous value. The chairman is the intermediary between the local authority and the school. He will, on occasion, smooth down any asperity on one side or the other. In the headmaster's study he will unfold the policy of the education committee, and expound the true inwardness of the difficulties that beset its path. In the committee room he will be the zealous champion of his school, and voice its legitimate aspirations.

A good chairman and a good body of governors should go far to mitigate a tendency which is likely to become a real danger to county secondary schools: that of rigidity of administration on the part of the local authority. The Board of Education is doing its best to encourage individuality in the schools; each school is to work out its own salvation, as the current phrase has it. The local authorities seem to echo this sentiment, and no one is likely to do otherwise than applaud so sensible an attitude. But unfortunately this applies only to the curriculum, the social side of the school *et hoc genus omne*. It is on the administrative side that the danger looms. The local authorities, mainly—it is to be presumed—through the influence of their permanent staffs, are developing a set of rules whereby all the schools under their control may be administered. They may almost be called formulæ: take, for example, that relating to the strength of the staff, which may be expressed thus—

$$\frac{N}{x}=S,$$

where N is the number on the school books, S the staff, and x a figure determined originally by the Board of Education, but interpreted by the local authorities not always in accordance with the wishes of the Board. Take another rule, which obtains in some counties, that the money to be expended on prizes is not to exceed, say, one shilling per head (£5 per hundred boys).

It is not suggested that such general rules are *per se* objectionable. On the contrary, it is readily conceded that they are necessary as a general standby. But such regulations lay bare the weakness inherent in bureaucratic administration. A permanent official is driven by the very nature of his office to cling for support to laws which may not be broken, to rules which admit of no variation, and the danger is that these rules may be over-applied, applied where there should be differentiation. Consider the case of two schools at which the terminal fees are respectively four guineas and one guinea. Each contains, say, 300 pupils, each earns a grant from the State, each looks to the "local authority" for the further assistance necessary to render it not only solvent but efficient. The four-guinea school is not likely to make so heavy a call upon the local funds as the one-guinea school, for the

[1] "England and the English." By Price Collier. (Duckworth, 1910.)

simple reason that it receives four times as much in fees as does its cheaper neighbour.

The local authority can adopt one of two courses of action: it may make an equal grant to each, or it may merely make good any deficiency on the year's working. A moment's reflection will show how inequitable the latter is, and yet it is to be feared that this is the course which frequently obtains. The parent of the boy at the more expensive school is presumably the man who pays the larger amount in education rate; he also pays four times as much towards the upkeep of his son's school as does the parent of a boy at the cheaper school. Is he to reap no advantage other than that which he supposes he is receiving by letting his son mingle with boys whose parents possess purses of a length similar to his own? Has he not a right to expect something better than he would get at the cheaper school: smaller classes, more individual attention, in a word, a stronger staff? That is but an example of the fatuity of rigid administration. It would not be difficult to give others.

It is not improbable that to advance a principle of differentiation such as that just suggested with respect to schools of differing fees would evoke in some quarters a howl of execration at "favouritism," the giving to the well-to-do an advantage denied to his less-favoured brother. But it would seem as though the boot were on the other leg. Under the "making up the deficit" system, the richer man pays more than the other, in rates and fees, while he receives less, in grants. The more the school is able to contribute, in fees, towards its annual expenditure, the less it receives from the funds of the local authority. Apart from that, so long as human nature, and in particular British human nature, remains what it is, you will not persuade men that they are not within their rights in expecting a return proportional to their outlay.

The last few paragraphs are not strictly germane to the subject of this article. They have been introduced because, as things go now, governing bodies are, in a sense, special committees of the central education committee of each area, and as such they are, or soon will be, brought face to face with this and kindred problems.

The appointment and dismissal of assistant-masters, the expulsion of pupils, and the use of corporal punishment may be taken as the points at which the spheres of governors and the headmaster are most likely to overlap, and consequently as the points on which diversity of view is most likely to find expression. With regard to the first-named, the appointment of assistant-masters, there is no uniformity of practice. In many cases it is vested in the governing body, on the ground that they hold the purse-strings. No doubt this principle is sound, provided that the headmaster be "effectively consulted." But even so its application is open to the serious objection that the tardy procedure—the summoning of a meeting at so many days' notice—frequently results in the loss of the best candidates, who naturally prefer to close with a man who can make them a definite offer on the spot, to a further delay with the added possibility of not being the man selected.

As to expulsion, corporal punishment, and kindred questions, the underlying principle to be remembered is that the final arbiter is public opinion. The preacher from the pulpit leads our thoughts, and we, the public, receive his words with cordiality, stolidity, forbearance, or impatience, according to the degree in which his message rings true. The newspaper leads public opinion, but at the same time it is the servant thereof. The preacher will quickly empty his church, the editor will soon lose his public, if he strikes the wrong note. It is not a question of "speak unto us smooth things": the public instinct is sound, it expects to be guided, but it knows very well when the guidance is right. In exactly the same way both governors and headmaster are continually at the bar of public opinion. If this fact is recognised, the headmaster is not likely to go far wrong in his conduct of the school, and the governing body will keep the reserve of power (which it undoubtedly ought to possess) strictly in the background.

We have reached a parting of the ways. The aloofness of the old-time headmaster, his resentment of any challenge to his autocracy, were for the nineteenth century. He must be captain on his own quarter-deck, but he must not forget that he is answerable to his Board of Admiralty.

DOMESTIC SCIENCE IN THE SECONDARY SCHOOL.

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DOMESTIC science as the title of a school subject has been lately used with such varied meanings that it would be well if those who are in any way connected with the teaching of the subject would consider what the words domestic science should for the future denote—that is to say, what we may claim to teach under that heading. The domestic economy teacher of former days is now often called a teacher of domestic science, though, as a rule, she would scarcely consider herself competent to organise and be responsible for the laboratory work in physics and chemistry in a secondary school. Heads of schools and compilers of examination syllabuses, on the other hand, use the term to cover a course of elementary physics and chemistry with practical applications to the problems of everyday life.

In the first case, the teacher is really a teacher of domestic arts, that is, a teacher of handicraft and applied science. In the second instance, the work indicated by a domestic science syllabus involves no training in handicraft; it merely

covers the ground of the usual elementary science course, with some special emphasis on those principles which are more nearly concerned with the phenomena of daily life.

It would be well if this confusion of ideas could be cleared up. A course of study designated *domestic* as well as *scientific* connotes training in skill to manipulate as well as training in power to observe and think logically. Therefore, to be complete, such a course should combine handicraft and practical laboratory work.

In considering any scheme of this nature there are certain general considerations which must not be lost sight of. First, the basis of the work done in the domestic arts course must be scientific. The fundamental principles of chemistry and physics are essential to the proper *understanding* of some of the most ordinary domestic duties. Therefore the introduction of a handicraft into the curriculum of a secondary school must not be allowed to interfere with, or take the place of, the practical laboratory course in chemistry and physics—this is a point of vital importance. The advance which has been made in the teaching of chemistry and physics during the last ten or twelve years must not be sacrificed for that which, on the surface, might appear to be of more practical value to the average girl, for the proper understanding of scientific facts is an essential factor in securing utilitarian efficiency. Further, and this again is important, since the scientific basis is essential, it is futile to begin a domestic handicraft at too early an age. It must be prefaced by a certain amount of laboratory work.

Secondly, there should be room for adaptability according to the needs of the school. The requirements of the elementary school are not those of the middle-class secondary school, and the high school again differs from both. Indeed, the needs of all middle-class schools vary so much that there should be room for variation in the schemes of domestic work. For this reason it seems most undesirable that the work should be stereotyped by being made to conform to examination syllabuses, especially while ideas generally on the work are in a plastic state. If domestic science becomes an examination subject, adaptability tends to be at an end.

It may be well to consider what are the aims involved in the introduction of a course of applied science into the curriculum of a secondary school. Emphatically it is not to produce expert cooks, laundry women, or dressmakers; but, in the first place, to train the girl in such a way that she will bring her intelligence to bear on the problems of everyday life, in fact, to develop "common sense" in dealing with household work. Secondly, by definite training in one branch of work, to make her (so far as is possible in the time) a capable craftswoman—though it must be remembered that no mere school course can make her an expert. But beyond this, more far-reaching results may be looked for in the future. By making some branch of domestic work a part of the school curriculum which every girl takes as a matter of course, the whole status of domestic work is raised. Taking equal rank with the other subjects of the curriculum, it becomes a necessary part of a woman's education. When the "well-off" girl and the poor girl alike work through the same course, the idea that household work is degrading should be relegated to the past. When domestic arts have taken their proper place in middle-class school education, there may be, perhaps, some solution to the problem of domestic service. Certainly it is hoped that in the near future such work will have the effect of drafting more girls, having a solid all-round education, into those occupations which are of a domestic character, and that an atmosphere may be created in school life such that the middle-class girl with suitable qualifications for domestic work will not consider it beneath her definitely to prepare herself for such work.

The question next arises as to what is the logical connection of domestic science with the other subjects of the curriculum. One ultimate object in teaching any domestic handicraft is to train in manipulative skill. Therefore simple kinds of handwork—drawing with pencil and brush, paper-folding, weaving, basket-work—form a suitable introduction to a domestic science course. This training of hand and eye can scarcely be begun at too early an age, and is of value not only as a training in dexterity, but because it develops the constructive faculty latent in every child. Drawing and needlework correlated with one another lead naturally from the simple handwork to a more definite course of technical work. The further essential preliminary is a practical training in laboratory work which has already been emphasised. The science course should extend over at least two, and better still three, years before the domestic work is commenced. It is scarcely possible to give time to more than one branch of domestic work during school years. It will probably be agreed that cookery is of the most practical use to the average girl, and it is also fairly easy to correlate with the chemical work.

The following is an outline of a scheme which has been found suitable for girls in a middle-class school, the science course beginning with girls of eleven to twelve years, and the purely domestic course being taken in the last year with girls of about fifteen years of age. By the last year is meant the year before any specialisation for examination begins; for example, every girl would complete the domestic course, and those who were intending to matriculate would afterwards proceed to the matriculation form. But every girl who passed through the school to the top form would take the domestic course, whatever was to be her future career.

Syllabus of Science Course for Middle School.

First year (1½ hours per week).

Measurement of volume.

Simple experiments on evaporation and condensation, solution, filtration, crystallisation.

Second year (3 hours per week).

Physics.—Density; simple experiments on conduction, convection, radiation.

Chemistry.—Experimental study of air and water.

Third year (3 hours per week).

Physics.—Specific heat, latent heat; evaporation and condensation. Pressure of air. Barometer.

Chemistry.—Experimental study of sulphuric, hydrochloric, and nitric acids. Chalk.

In the last year the special course includes chemistry, cookery, and hygiene:

I. *Laboratory course* (1½ hours per week).

Experimental study of carbonates; caustic soda, its action on fats, manufacture of soap.

Experiments to determine presence or absence of water, and elements contained in albumin, starch, fat.

Examination of starch under microscope; its detection in food-stuffs.

Some account of the food value of carbohydrates and proteids.

Examination of flour; separation into starch and gluten.

Examination of milk; separation into constituents, casein, &c.

Some of this work may be done quantitatively, and will lead up to tables of percentage composition of the commoner food-stuffs which it will be necessary to use if food values are discussed.

Meat.—Experiments to detect albumin and to find the action of heat under varying conditions.

Some account of the comparative digestibility and nutritive value of the commoner food-stuffs may with advantage be introduced.

II. *Kitchen course* (1½ hours per week).

The order of the work in this course must be arranged to suit the laboratory course.

Preparation of simple breakfast dishes: bread and milk, porridge; tea, coffee, cocoa; eggs cooked in various ways; bacon, dried fish, and herrings.

Puddings made with milk and eggs, cereals, &c.

Pastry; fruit tarts, &c.

Bread. Simple cakes.

III. *Hygiene course* (¾ hour per week).

Elementary physiology, including processes of digestion.

Laws of health.

It is fairly simple to arrange such a course so that the lessons in each subject are related to one another without attempting any rigid correlation lesson by lesson. For example, experiments on yeast and fermentation should be completed before a lesson on bread-making is given in the cookery class. Similarly, the composition of bicarbonate of soda and its action with tartaric acid must be thoroughly understood, as the result of experimental work, before a lesson is given on pastry-making; but it is not necessary or advisable that the discovery of the evolution of carbon dioxide from baking powder should immediately be followed in the next cookery class by an attempt to make a cake with and without baking powder. All that is necessary is that the principles underlying a particular cookery process should have been mastered previously as the result of experimental work.

Experiments should be rigidly excluded from the kitchen. The work done there should be regarded as a handicraft, and good results should be expected. It should only be necessary in the cookery lesson to recall and re-emphasise facts already known and understood. If the cookery lessons are thus made successful, the girls become interested in their work and take pride in their skill to produce a well-cooked meal.

Experience shows that a threefold scheme of this nature can be completed in one year with girls of about fifteen years of age. Notes of practical work are written in class. No hygiene homework is given, and only fifteen to twenty minutes' homework after the science lessons.

At the end of such a course as is here indicated a girl should be able to prepare, cook, and serve a simple breakfast or dinner without assistance. Of course, she lacks experience. In a short school course much time cannot be given to practice, but a girl should have a grasp of the connection between scientific fact and domestic processes, and should be more able to grapple with household problems intelligently. Such a course is naturally incomplete. It is only intended to be an intelligent beginning. In the future, probably, the secondary school will see the necessity for providing a further course in household work for those girls whose vocation is the home and for those desirous of following some domestic occupation. So that the girls' secondary school of the future will not only equip the future university student and teacher, but will consider that preparation for home life—the life-work of the majority of women—is a fundamental part of its work.

The equipment for such a school course as has been indicated need not be elaborate and expensive—the simpler and more home-like the better.

The question of the teacher for such a combined course is of importance. It is clear that one person must have the ultimate control of the three subjects, if a proper correlation is to be observed; and if the cookery course is to be regarded as applied science, the science mistress and cookery mistress must work in close relationship. Obviously the ideal arrangement is that the same person should teach the three branches. But the average domestic economy teacher of to-day is scarcely prepared to teach pure science, and there are not many science mistresses who would care to attack the difficulties of a cookery class. In the future we may hope to see the fully equipped home science mistress, trained in scientific method as well as in handicraft. In the meantime, if the science mistress can teach all the branches of the subject she will see that experimental science retains its proper place as the basis of all the work.

The working out of such a scheme as has been indicated will be found full of interest both to the teacher and pupils, and is worth time and thought, though obviously it involves difficulties for the science mistress not specially trained in handicraft. She has to give her attention to many new details, and it must mean to her a certain disloca-

tion of thought to turn from the purely scientific experimental work to discuss the best methods of cleaning a saucepan, and to supervise the washing of dish-cloths and towels. This might be better done by the person trained in handicraft, but the teacher of the applied science must possess sufficient scientific knowledge to work in sympathy with the science mistress, who must have control of the whole scheme. It follows, then, that the domestic science mistress of the future must be trained so that she is ready to grasp the situation from the scientific as well as from the practical and utilitarian point of view.

The curriculum of the secondary school is full, even overcrowded, but when it is recognised that this work is a fundamental part of woman's education, it will be found possible to readjust the subjects so that a place may be made for it without sacrificing any essential.

THE TEACHING OF FREE COMPOSITION IN MODERN FOREIGN LANGUAGES.

By HARDRESS O'GRADY,
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AFTER a decade of learning and experiment we may now say that there are certain broad aspects which distinguish the Direct Method from other methods, and we realise fully that the teaching of languages along such lines demands not only a sound knowledge of our subject, but also of the psychology of linguistics, infinite patience, some leisure, and the quiet determination that is better than enthusiasm. None the less there is a very great deal of work still to be done in altering and improving the method; there is also a certain need for standardisation. In the matter of free composition we are very far from a final solution of the several problems that confront us, and I should be extremely sorry if anything in this article gave reason to suppose that I regarded my point of view as one generally accepted. This is merely my contribution to the discussion; it is the result of independent thought and of strong personal conviction; but I am willing to confess that while I fancy my point of view is not likely to be altered, I am far from thinking that the criticisms and suggestions I am going to put forward cover all the ground.

Before going on to method and detail, it is absolutely necessary to define the word free composition and to state my reasons for urging its adoption. By free composition I mean writing in the foreign language without translating from an English text. I do not mean only original writing-down of thoughts on a set subject. Every kind of writing in the foreign language without translation is to me free composition, although I naturally distinguish between the elementary and preparatory exercise, the middle-form pattern-writing, and the final essay. I urge the adoption of such writing without translating from an English text, because it is part of my point of view that one should attempt to stimulate the self-activity, the liberty of expression of the child, that one should make the work in general as much independent of the mother-tongue as is practicable, and because the alternative to free composition is translation. Translation demands a knowledge of both languages greater than most pupils possess, probably of their own, certainly of the foreign language. In lower and middle forms it very easily becomes transliteration, the expressing of the English in a foreign-sounding jargon. Free composition, on the other hand, does not lead them further than they can go, the subject is bound by the limitations of their knowledge, and that is an object we might well desire in the writing of English composition also. Lastly, I think that the method I am putting forward is superior to any methods I have come across of teaching translation into French or German, because I link it closely with vocabulary, and because it is far more carefully graduated than can be the case where the influence of another tongue, with its different constructions, its different psychological development, is continually being felt.

It is undoubtedly true that in the first heat of discovery in the teaching on direct lines, far too much was made of purely oral work, far too little of careful, written exercises. A wave of sentimentalism swept over modern language work, and nearly washed away the word "written exercise" altogether. In our attempts to make French and German agreeable we very nearly forgot that all teaching is disciplinary as well as stimulating. I have in the last twelve months seen some appalling French written work sent up by people whose knowledge of the spoken language was quite pleasing. And I am prepared to doubt whether there is not something a trifle—immoral in habitually neglecting the correct spelling of a language, in feeling that it matters little how the page looks, so long as it sounds right. I hold that the oral work should precede written work for some time, perhaps for six months or a year, and that after that oral work and written work should go hand in hand, that to a great extent the written work should arise out of the oral work.

In any case, the first year should be devoted to acquiring vocabulary, a minimum of extremely necessary words, concrete and abstract, elementary parts of verbs, and the ability to ask questions about the words, to answer questions about them, and to make sentences with them and about them. I think, too, that quite soon the pupils should see these words and questions and answers written up on the board, and as soon as the written work commences it should be at first simply a repetition on paper of all this oral and blackboard work. It is in this initial stage that mistakes must be sternly discouraged. Only after the most careful working-out on the blackboard should the questions and answers be committed to paper, and a repetition of the same mistake should be visited with condign punishment. I cannot emphasise too strongly my maturer belief that sentimental kindliness in

letting such mistakes be repeated without severe discouragement is mere weakness. It will bear fruit in a crop of regular mistakes which will not only rot the pupil's work, but increase very considerably the corrections of the teacher. Is it not obvious that a thing once done or drawn or written down will tend again to be done, drawn or written down, not in a new way, but in the same way. Mistakes tend to repeat themselves. A correction must not be merely a coat of whitewash, it must be a counter-irritant. Or, in psychological parlance, it must be of a nature to inhibit the old impulse. All of which does not in the least prevent a lesson and the work from being made interesting or stimulating.

For quite a year of written work the exercises will consist, then, of question and answer, with grammatical exercises of the kind we have in Mr. Kirkman's series (A. and C. Black), or Prof. Rippmann's series (J. M. Dent), or Prof. Savory's series (Clarendon Press). These exercises are particularly necessary, since they direct attention to the usages of the language and are the gymnastics by which one learns to handle the weapon. There should be a great many of these on any one point. They should certainly be worked by the teacher, or preferably by pupils, on the blackboard. When a mistake is made, it should be corrected by the class at once, and the correct form written in its place. Once a week there should be written work on paper on the same lines, even on the identical exercises, as those done on the board. This will go on for a year or a year and a half.

So far we have only disconnected sentences on the text-book or wall-pictures, disconnected in so far as they are practically all principal clauses, with the exception of "because" clauses. The time has now come to weave them together. A subject heading (the harvest, bread-making, dinner, the work of the servant, &c.) will provide a certain unity for a composition consisting of answers to a series of questions, which are specially set so as to bring out a more or less united whole. Thus the questions might run (with the monition that complete sentences must be given):

L'ÉTÉ.

Qu'est-ce que l'été? Quel temps fait-il en été? Fait-il chaud ou froid (en été)? Comment sont les arbres? les fleurs? l'herbe? le blé? Quand fait-on la moisson? Qu'est-ce que la moisson? Pourquoi est-il agréable pour les enfants de passer l'été à la campagne? Comment peut-on s'amuser en été? Dans les champs? Dans la grange? Dans la rivière? Sur le bord de la rivière? Où mange-t-on souvent le déjeuner? Pourquoi se repose-t-on sous les arbres? Aimez-vous l'été? Pourquoi?

This is but a sketch of what may be attempted, but it gives a correct idea of the method of approach. This may be varied by giving the questions in no particular order, and asking the class (1) to rearrange them in a logical sequence; (2) to answer them so as to make the result something in the nature of a composition. And here we may well begin to introduce the use of particles and conjunctions of a simple kind; "because" and "when" will have made their appearance, others offering not too great a difficulty (as do the subjunctive in French, the order of the sentence, &c., in German) may be worked in. German and French here offer such different obstacles that it is impossible to generalise. But the First French and German books (Dent) offer excellent hints for the introduction of such valuable words as "although," "until," &c., though I doubt whether these points are not really of second or third year standard.

In the second or third year, too, should begin the deliberate, careful copying-out of good French and German passages. They should be copied several times each and then learnt by heart and recited aloud, and finally written down from memory. To keep fresh the vocabulary learnt in the first year or two picture vocabularies should be used for constant revision and—I say it without shame—for cramming. But the cramming will have its psychological excuse in the connection which exists between the pictures and the lists, and in the fact that each picture is really an association-group. Word-formation exercises ("Donnez autant de mots que possible de la même famille que *cheminer*—p. ex., chemin, cheminée, chemineau, s'acheminer—en expliquant chaque mot ainsi formé par une phrase qui sert d'illustration") are also very valuable at this stage, and so are exercises which ask for an explanation of the meaning of words in a foreign language. Such exercises, grammatical, explanatory, word-forming, transliterating, will give the pupils such familiarity with vocabulary and idiom that they will not shrink from using any but the commonest and simplest forms. But to this point, for it is a point of attack, I will return.

For all this work the "First Course" or "Book" should be sufficient, with the possible addition of the "Second Course" or "Book" of the same series. Later a special book would be introduced for composition work, in order to increase the importance of written composition in the eyes of the class, as well as to serve the special purpose of a gymnastic course. Such a book would contain the following sections:

(1) The turning of passages in the singular into the plural.

(2) The turning of plural passages into the singular.

(3) The rendering of passages in the first or second person as passages in the third person.

(4) The rendering of passages in the third person as passages in the first or second person.

(5) Rendering passages in the present tense as passages in (i) the past, (ii) the future.

(6) Rendering of past and future tense passages as present tense passages.

(7) Passages from good German or French authors to be copied and learnt by heart.

(8) Rendering in prose of a poem read in the book.

(9) Rendering in prose of a poem (narrative) read out several times by the teacher.

(10) The rendering of a prose story read out by the teacher.

(11) The careful reading and dissecting, with reconstruction in skeleton shape, of a fable read in the text-book, then the writing of a similar fable from a given skeleton in the text-book.[1]

It will be seen that there is no attempt yet to introduce essay-writing on an isolated title. This is work for a fourth or fifth year, to which I will come in due course. Before leaving the period of reproduction I propose to give an example of the method of procedure. The class has read carefully the fable of the Fox and the Crow in La Fontaine's version. With the help of the class the following *questionnaire* has been constructed and written on the board:

Qui est-ce qui était perché sur un arbre? Où était le corbeau? Où le corbeau était-il perché? Qu'est-ce qu'il tenait dans son bec? Où était le fromage? Où tenait-il le fromage? Où était le renard? Pourquoi s'approcha-t-il du corbeau? Par quoi était-il attiré? Qu'est-ce qui attira le renard? Qu'est-ce qu'un corbeau? Qu'est-ce qu'un renard? De quelle couleur est le corbeau? De quelle couleur est le renard? Comment le renard commença-t-il son discours? Pourquoi dit-il "Monsieur *du* corbeau"? Qu'étaient généralement les personnes qu'on appelait "Monsieur *de*, Madame *de*, Mademoiselle *de*"? Pourquoi dit-il "sans mentir"? Qu'est-ce *le ramage? le plumage?* Écrivez en d'autres termes, "Si votre ramage ressemble à votre plumage" et "Vous êtes le phénix de ces bois." Pourquoi "phénix"? &c., &c.

To these questions full answers are given orally. Next, the unnecessary questions are eliminated, and on another blackboard or part of the wall blackboard (Blackboards! And more Blackboards! And yet more Blackboards!) are written the answers. The next step consists in polishing these answers into the semblance of a good connected story. After this, again on the board, a plan or *développement* is constructed with the help of the class, giving in very brief notes the main point of the story. Or better still, each pupil is asked to make up his own plan, to vary the story, to add descriptive touches, and then to submit his plan to the teacher. Lastly, the story is written out a week afterwards by the class, in school or at home. The fable so treated might take a week, or, with grammatical and word-formation exercises added, it might last four or five lessons before the individual writing of the reproduction could start.

It will be obvious from the above sketch of preliminary work, that when the time comes for really independent writing, the average pupil should have a considerable stock of phrases and words and usages at his fingers' ends. He ought to be possessed of a good, simple style, though no manual can teach him what to avoid and what to use so well as his master can. Indeed, the work at this point must be so individual that I can do no more than lay down a few general precepts for guidance. Good phrases, proverbs, idioms, might be learnt by heart and then introduced into sentences to illustrate their use. Passages from authors noted for their style might be read aloud in class, and the neat turns, the excellencies noted. Various authors might be compared. Undoubtedly there should be rapid, silent reading, and a note-book ought to be kept by each advanced pupil in which he could jot down the turns of speech, the phrases, the rhythms even, which had pleased him.

One very strong objection is urged against free compositions for examination purposes, namely, that they are no test of what a pupil does *not* know, that they enable the weak candidate to do as well as the strong candidate by avoiding difficulties, and that so far the best compositions are all in a very simple style. To this I would answer theoretically and practically. Theoretically, I should say that some of us still nurse the pleasing illusion that examinations should find out what the candidate knows, not what he does *not* know, and that there must be something strangely wrong with the examiner who cannot differentiate in his marking between the candidate who avoids difficulties in his writing and the candidate who welcomes and overcomes them. Lastly, quite a large number of literary critics commend a simple style as having peculiar beauties of its own. (*Simplex munditiis!*) My practical advice is that in the advanced classes syntactical and idiomatic difficulties should be deliberately grappled with, and that pupils should be encouraged to use such forms consciously. I am quite aware that in a good style the use of such forms should appear unconscious, but all effort in a new direction must be conscious before it becomes habitual. Something might be done, too, in the way of conscious imitation of an author with a strongly individual style, and the note-book which I have mentioned above, containing forms, idioms, quotations, proverbial sayings, which have appealed to the advanced pupil, should be in constant requisition. As regards the treatment of general topics, such as the value of games, compulsory service, disarmament, the morality of throwing banana skins on the pavement, and so on, I think that a preliminary debate in German or French is undoubtedly the best method of approach, with a summarising on the blackboard of the main points made for and against. There might also be a deliberate teaching of good methods of beginning and ending, though it is absurd as yet to expect that British pupils can be expected to write French or German like French or German students.

To summarise, then, I divide the teaching of free composition into five main parts: (1) Question and answer; (2) copying-out; (3) reproduction; (4) imitation; (5) original work on a given theme. All but the last stage should be carefully prepared by oral class-work and blackboard work. Difficulties in the way of idiom and syntax should be consciously made use of until habit permits the pupil to introduce such difficulties unconsciously.

I doubt not that such a course of teaching would

[1] Such a book for French free composition is now in course of preparation by Miss Hart, of the Sydenham High School, and by myself. The outline given above is subject to no copyright other than that which good faith and goodwill will impose.—H. M. O'G.

immensely improve the advanced pupil's ability to translate correctly either from or into a foreign language, because it would not only give a command of vocabulary and usage, but enable the translator to consider several different ways of expressing the thought or statement. And here I may well conclude by quoting a remark made by Prof. Rippmann, to whom my debt in these matters is very considerable, that "unless one can think of three or four different ways of expressing the English in the foreign language, one is not *translating* at all."

AIDS TO GOOD GEOGRAPHICAL TEACHING.

By A. WILMORE, D.Sc.
Headmaster of the Municipal Secondary School, Colne.

THE last few years have seen remarkable advances in the teaching of geography, and this subject is no longer relegated to the odd man or woman of the school staff, but now takes its place as a powerful means of developing the faculties of the pupil. At least, that is the case with a great many, probably the vast majority, of schools.

Almost every school has now its "apparatus" for the teaching of this subject: atlases, globes, modelling trays, collections of ordnance maps, orographical maps, relief models, collections of products, albums of photographs, school lantern, and so on. Most of these are necessary, and no good school will long attempt to get along without them. But in this, as in every other subject, the teacher who is enthusiastic is ever on the look-out for odd helps, which are always turning up, reinforcements to help him in his work, by interesting his pupils and lending variety to his teaching and to their study. I wish to deal with some such adjuncts which I have found of great help. These, of course, are only selected from many possible, and others will readily occur to the earnest teacher.

THE USE OF A DAILY NEWSPAPER.—A few times each term a daily paper is made to help in our teaching, the particular use depending on the form or class, and the age and attainments of the pupils. The possibilities are so numerous and varied that one can only make selections. I take first of all the weather charts of the *Times*. We happen to be situated in the neighbourhood of a free library, and I have secured the sympathy of the chief librarian. I have been able to borrow the *Times* on many occasions when the weather chart has been more than usually educational. Some time ago a most pronounced anticyclonic system, with its characteristic cold weather, was rather quickly followed by a most pronounced cyclone, accompanied by a rapid rise of temperature. I made out maps of Western Europe on our blackboard sheets, and then copied from the paper the isobars with the temperatures, direction of winds, &c., simplifying the maps somewhat so as to make them a little more effective. This was for the more advanced classes in a secondary school—that is, for pupils of sixteen years or over.

I allowed the pupils to copy these two maps, and thus they became more familiar with the variable weather we experience in these islands. By emphasising the point that these maps represented the atmospheric conditions on certain days, one was able to correct somewhat the mistaken ideas that pupils often acquire from the continual study of maps representing average conditions, yearly or seasonal, as the case may be. It is scarcely necessary to emphasise the point that the pupils will become more intelligent observers of such weather maps, and of others published in other newspapers.

I now take as illustration the *Manchester Guardian's* articles on the trade, especially the actual shipping trade, of the Manchester Ship Canal. We happen to live in a district where the *Manchester Guardian* is our most prominent penny newspaper, and it comes into the homes of many of our pupils. I have reason to believe that what we occasionally do in school is very often done in consequence by the pupils in their homes. Perhaps the mere tonnage of ships entering is not of much educational value, but when a table is drawn up of the actual products which have entered in a week, one is emphasising in a most marked way much of the previous teaching. Here is the week's timber trade of the Baltic: pitprops, box-boards, scantlings, wood-pulp, paper, and matches; you bring out your specimen of wood-pulp, and you discuss the use of water-power in Scandinavia, and thus you have illustrated the structure and the climate of that peninsula in a most practical way. You notice that there is a vessel from Archangel, and you ask your junior classes to look up the winter lists of vessels, and you have helped them to teach themselves about the closed White Sea in a way which certainly impresses them much more than the mere statement of climatic differences, even if illustrated by seasonal maps with January and July isotherms. Your teaching has passed from the abstract to the concrete.

Occasionally on the last page of the paper just mentioned there are articles of a somewhat miscellaneous character, and now and then one of these is an excellent geographical study, suitable for the middle and upper forms of a secondary school; perhaps more rarely suitable for the lower forms. The very last article of this character which I used came in the closing week of last term, at a time when examinations were over, and results had been announced, and when it was difficult to secure interest in the ordinary routine of school lessons. The subject was "Sind," and it amounted to an excellent study of a tropical desert land, with a river flowing through it, which is fed by seasonal rains or by the snows of distant mountains. We got out our physical maps, and especially looked up our rainfall and temperature maps; and I believe the pupils of our upper forms understood the Nile valley, the plains of

Mesopotamia, with the Euphrates and Tigris, and the Indus system, much better because of the specific way in which that able article brought out the relation of the latter river to North-Western India. We had discussions about irrigation, about rivers overflowing their banks, about barrages, about shifting and growing delta-deposits, all of which came in quite naturally, and were evidently more than usually well grasped because of their association with this concrete example.

I only believe in the use of such an article after there has been the usual systematic study and teaching, but I believe it stimulates interest as well as secures a sort of effective revision. I have often had these articles cut out (and articles of a like character from other papers and magazines), and have allowed them to circulate. To any teacher adopting this method it may be necessary to point out that a rather strict censorship is necessary, as some of the statements appearing in certain papers which have been brought to me by pupils needed—to put it very mildly—somewhat careful revision.

At this point I may say that I encourage pupils to bring any difficulties that they or their parents and their friends have found in their ordinary newspaper and magazine reading, in connection with geography and history, and what we may call the general knowledge which accompanies these branches of knowledge. I have some difficulty at times in clearing away misconceptions due to hasty newspaper writing. To take two recent examples. First there was a "discovery" of chert in Swaledale, which seems to have been chronicled in several newspapers, and the paragraphs concerning which were written by men who knew very little about chert, and less still about the carboniferous limestone and associated rocks in which that chert occurs. I found it necessary to get out our specimens of chert (among which were specimens from Swaledale, where it was said to have been recently discovered), and to give some explanation of the composition and physical properties of chert. Of course, it was all knowledge gained for the pupils, and I suppose I ought not to complain.

The second case was in connection with the recently boomed "gold mountain" in the north-west of Canada. There was considerable ignorance shown as to the nature of pyrites and the association of gold with pyrites, and generally as to the occurrence and extraction of gold. I repeat, one has to be careful. But as our pupils WILL read papers it is better to train them as far as possible to sort out the wheat from the chaff. Hence the necessary care is not by any means wasted.

THE USE OF PHOTOGRAPHS.—I presume that many schools have albums of photographs. These may now be obtained of good quality and of fairly good selection. But I prefer to get my own together, and I depend very largely upon my own pupils, their parents and friends, making such additions myself as I think necessary when I visit a district which lends itself well. On the whole, I prefer to keep to physical geography features on one hand, and to historic buildings on the other. It is a good training for boys and girls who are prone to use their cameras as toys, and on somewhat trivial subjects, to expect them to bring you good "readable" photographs of natural features of various kinds.

We have now accumulated a fairly good collection of such photographs, chiefly British, though pupils who have gone abroad or whose friends or relations are abroad, have made some additions to the list.

Just as I believe in the teaching of geography being made as concrete as possible, so, perhaps, I may best illustrate by concrete examples. A boy recently showed me an excellent photograph of folded and faulted slaty rocks in the Isle of Man, which he had taken while on a short holiday. This was promptly requisitioned for the school collection. Of course his name appears on the back of the print which he gives to the school. Another pupil some time ago took the work of a Pennine stream coming down from moorlands of millstone grit, and he got us a series of photographs illustrating the various phases of the work of such a mountain stream.

One pupil added views of Morecambe Bay; the rocks of the shore, and views across the Bay. Another boy had taken, in company with his father, a series of views of the lakes and mountains of the Lake District. A third boy had tried his hand on photographs of limestone scars and waterfalls in the district of the West Yorkshire Dales. These have all been added to our collection.

I spent a short Easter holiday at Flamborough, doing a little geological work. I brought back views of the stacks or detached rocks, of the caves and the little bays, all of which illustrate sea erosion. I also brought back photographs showing the dark boulder clay lying on the grey chalk rock, and as we have plenty of glacial deposits near our school and in our district, we can compare the glaciation of East Yorkshire with that of our own district, since I also brought home an extensive collection of erratics from the boulder clays of the Flamborough district. These examples will illustrate the scope of such a school collection. I may add that pupils are greatly interested in such photographs, as there is some personal interest attached to them, and I have often noticed that when a photograph, or a series of them, is brought out to illustrate some point in reading or discussion, we have little further trouble with the particular point concerned.

PUPILS' COLLECTIONS OF ROCKS AND MINERALS.—It is manifestly impossible to teach modern geography without continual reference to the rocks of which a district is composed, or to the contents of those rocks. It is, of course, a truism of physical geography that the features of a region as well as its capabilities for agriculture and other industries must depend upon the nature of its rocks and the changes they may have undergone subsequent to their deposition, intru-

sion, or extrusion. It is equally obvious that simply to talk about these rocks or to read about them will be of very little value. Even good photographs of rocks are of very little value, and I doubt if they are even to be recommended, at any rate for young pupils. There is no excuse for not having the real thing.

It is, of course, possible to purchase very good and comprehensive collections of rocks and minerals, and even the most ardent of us must be prepared to purchase some specimens, but I believe in collections made by pupils and teacher as far as possible. Personally, I have not spent a holiday for many years without adding some new rock, fossil, or mineral to the teaching collection. In this way, at very little expense, we have now a collection that is very rarely at fault so far as Britain is concerned.

But better still are those specimens which have been collected by pupils themselves. If pupils are encouraged, they will very readily give themselves to this work. I hope in a subsequent article to develop the proposition that it is as good training to collect and study good average rock specimens as it is to study, *e.g.*, crystals of copper sulphate, or powdered mercury oxide, or any other ordinary substance of the laboratory. I shall assume that proposition for the present, and indicate, again from concrete examples, how this collecting may be encouraged.

A boy spent a holiday in Belgium, in the carboniferous limestone region bordering on the Ardennes. He not only brought home some excellent specimens of carboniferous limestone fossils from the classic Dinant region, but also some specimens of the famous Belgian marbles. As he also brought specimens of flints from the chalk country near to Waterloo, he must have learnt something of the structural physical geography of Belgium. His specimens, of course, still remain in our collection, and they have more than once been useful when we have been discussing the carboniferous rocks of Belgium and the contained coal-field of the Sambre-Meuse valley. That is one instance out of many.

This year I am endeavouring to use the holidays of the pupils, and not only to add to our collection, but to give some objective to the holiday. I have offered a small prize for the best collection of rocks illustrating any given holiday region, such as North Wales, the Lake District, the Yorkshire Coast, the Yorkshire Dales, or any other region likely to be visited by our East Lancashire pupils. I stipulate that the rocks must be obtained from a cliff, or quarry, or river, road, or railway cutting, and not from a casual roadside heap, or from the beach or the gravel of a river. They must, therefore, be original and not derived, except that, of course, one would not exclude erratics from a boulder clay, for instance.

I am sure it will be good geography if we can recognise from our pupils' own specimens that, for example, the rocks of the Buxton-Matlock region of Derbyshire are similar to those of the Settle region of the Mid-Pennines, and that these are quite different from the Jurassic and Cretaceous rocks of the Yorkshire coast, or the slates, igneous rocks, and other types of the Lake District. And it must be good education if a pupil learns to collect carefully, to classify, to compare, and then begins to use his collection in his own further studies.

These are only examples, as I have already said. Every good teacher will find and employ others from time to time as they turn up.

AN AMERICAN TRADE SCHOOL FOR GIRLS.

By CHARLES COOPER.

ABOUT eight years ago the attention of a group of men and women interested in educational and sociological problems in New York was directed to the question of the beneficial employment of young girls of the working class on leaving the public schools. There are in the United States, as in this country, many schools of a technical or domestic nature, but the instruction is not specialised sufficiently to be of any practical value in fitting a girl for remunerative work in the factory or the workroom, and employers of women labour generally regard graduates from such schools with distrust.

Those interested in the establishment of the Manhattan Trade School—the first of its kind in the United States—formed themselves into a committee, which spent five months in collecting information whereon to formulate a sound practical scheme. As the *raison d'être* of the school was to meet the requirements of employers, the time spent in preliminary inquiries was devoted mainly to investigation in the factories, workrooms, and department stores of New York City, and the collection of information as to the trades in which instruction in skilled work was most particularly needed, in which the rate of wages and prospects of advancement were greatest, and the hygienic conditions most favourable to the well-being of the workers.

Girls of fourteen, released from the public schools, the children of poor parents, are at once faced with the necessity of finding some wage-earning employment, but, having no expert knowledge of any trade, they drift at once into ill-paid mechanical work, which holds out no promise of future advancement or facilities for self-improvement. The girl occupied from morning to night in tying up parcels, sorting silks, wrapping braid or running errands is learning nothing, and her wages, never high, rise and fall according to the need felt for her services, but never because her increasing ability is a factor in her trade life. After several years of such employment she is little, if at all, better off than at her first start.

The promoters of the Manhattan Trade School passed over various trades on different grounds of unsuitability: in some cases the clashing with men's employment affected the scale of wages injuriously; in others irregularity of employment or unhealthy conditions operated as bars. The

trades ultimately selected included (i) the use of electric-power-driven sewing machines for both cheap and high-class trade work; (ii) the use of needle and foot-power sewing machines for dress-making, millinery, and fancy work; (iii) the use of paste and glue for sample mounting, jewellery-case making, novelties, &c.; (iv) the use of brush and pencil—elementary art trades, costume sketching, photograph retouching, &c.

The School.—The scheme having been formulated, the Manhattan Trade School for Girls began work in November, 1902, in a large private house, which was equipped as a factory and could comfortably accommodate a hundred pupils. Within a few months of its establishment the school was overcrowded, but it was not until June, 1906, that it was possible to make a move into its present premises, which then provided instruction for about five hundred girls. The original staff numbered nineteen; the present staff consists of about fifty officers and attendants. The director is Miss Mary Schenck Woolman, professor of domestic arts, Teachers' College, Columbia University.

The tuition is entirely free, and the school is open all the year round to train girls whenever they come. Girls from fourteen to seventeen years of age only are accepted. Each girl on entering is allowed to choose her trade, and is given a paper which sets forth the possible steps of advancement in her chosen course. The first month is regarded as a probationary period; if the girl pass through it satisfactorily she is allowed to continue; if, however, her instructors consider her unsuited to the selected trade, either from want of special aptitude or on the score of health, they reserve the right of making a complete change in her training.

Physical Education.—The staff of the school includes a doctor, and every girl on admission undergoes a rigorous medical examination. Drawn from some of the poorest classes in New York, many of these children are found to be suffering from defective vision, enlarged glands, decayed teeth, adenoids, anæmia, skin eruptions, asymmetries, and so on. The work of the physical department is to correct as many of these irregularities as possible. The school being in close touch with many philanthropic societies and public hospitals, the best professional attention is available in cases of serious disease or malformation. Tuberculous subjects have been sent to country or tubercular camps; braces and plaster jackets have been supplied in cases of asymmetry; teeth have been carefully treated; and glasses, if needed, are procured, at the expense of the parents when possible.

Girls who pass as normal on the first examination report for gymnastic exercises three times a week. If asymmetry, curvature of spine, heart disease, or nervous disorders are indicated they report for special corrective exercises. A year's care shows, as a rule, that few girls, except cripples and others needing simple operations, are in any way handicapped by the effects of disease.

Students' Aid.—On account of the extreme poverty in the families of some of the students, some system of aid has always been found necessary. This at first took the form of a scholarship, but after the first year the scheme was revised, and a plan adopted whereby the need of the girl's family became the basis upon which money was given. The Students' Aid Committee consists of representatives of sixteen settlements, who meet twice a month to discuss and decide upon the merit of each application. In determining the amount of aid to be given the settlement worker ascertains the total amount of the wages earned by the girl's family, and, calculating the *per capita* income, recommends assistance in such cases as fall below what is regarded as the minimum upon which a decent standard of living can be maintained. Sometimes the aid granted is a mere matter of car fare; in others it takes the form of a small weekly wage. A girl receiving aid incurs an obligation to attend with regularity and to show herself a responsible and earnest worker. If her reports are unsatisfactory, the aid may be suspended or withdrawn at any time. The object kept in view by the committee is to avoid any appearance of pauperising the recipients and at the same time to protect themselves against imposition.

Preliminary Training.—On beginning the trade courses at the school a difficulty was at once discovered which established the truth of the complaint made by the trade that young workers fresh from the public schools are utterly incompetent. The defects which were especially evident were (*a*) lack of sufficient skill with the hands; (*b*) inability to use their public-school academic work in practical trade problems; (*c*) dullness in taking orders and in thinking clearly of the needs which arise; (*d*) absence of ideals; and (*e*) need of knowledge of the laws of health and how to apply them. Preliminary elementary instruction in all these subjects had therefore to be organised and given to the students before they could begin upon their true trade work.

Obtaining and Training Teachers.—One of the great difficulties that the management had to face was the securing of competent teachers in the different trades. Experienced teachers in manual schools know little of the ways of workrooms, and are too theoretical to be trusted to train workers who must satisfy trade demands. On the other hand, the trade worker or forewoman, however good she may be in her *spécialité*, seldom knows how to teach. In the course of years the difficulty is righting itself, as the school is now in a fair way of establishing itself as a training ground for its own teachers. Clever girls who have shown ability in their department work, and have secured good positions in trade houses, have found their way back to the school as teachers, and have proved very helpful, since they know the course of instruction and are equally acquainted with the outside workroom demands.

Placement Bureau.—This department was established in October, 1908, the work of securing

engagements for girls on leaving school having become too arduous to be longer undertaken by the heads of the teaching departments. Since its establishment the bureau has opened up relations with seven hundred firms, and has paid visits of inspection to the establishments of five hundred and fifty of them. No girl is sent out to a situation unless the bureau has some exact knowledge of the conditions to which she will be subjected. These visits of inspection are welcomed, and in many cases invited, by the manufacturers themselves, since a favourable report by the Manhattan School Bureau is in the nature of a testimonial to the approved conduct of the establishment. The bureau keeps in touch with both employer and employed, and receives periodical reports from each.

The faculty of a trade school, Miss Woolman says, needs the co-operation and assistance of the working people and the employers of labour. Only through intimate interrelation with them can the best and most practical results be obtained. Auxiliaries and committees of employers and of wage-earners, visits of the staff of the school to the trade, and of employers, forewomen, and workers to the school, the carrying out of orders for workrooms and assisting them at busy seasons, are some of the ways by which the Manhattan Trade School has tried to gain the help of the busy industrial world.

Apart from the profit derived from sale of work and execution of trade orders, the Manhattan Trade School has depended entirely upon voluntary contributions. The expenses are heavy, the last recorded annual budget—that for 1908–9—showing an expenditure of about £10,000. At the beginning of the year there were 254 students in the school, and 689 more were registered during the year. There have been few large donations to the funds of the school, its income being derived from all classes in the community—workers in sociological, economic, philanthropic, and educational fields; employers of labour; and, what is most valued, the contributions of wage-earners themselves—not only the girls who have benefited by the instruction, but the general mass of women workers, who, knowing the difficulties they have themselves encountered in their struggle to rise, have shown themselves willing to set aside a small sum out of their earnings to help in the good cause.

The management has, it would appear, given up definitely the expectation of securing any assistance from public funds devoted to educational purposes. Experience has shown that if the training is to be effectual there must be a continual study of the ever-varying conditions of the trades for which it caters—conditions which are affected by seasonal requirements, the introduction of novelties, and changes of fashion. As a consequence there can be no finality in the system of instruction—the curriculum is subject to continual readjustment, and this alone makes it irreconcilable with the cast-iron syllabuses beloved of Boards of Education.

NOTES ON GERMAN EDUCATION.

From A CORRESPONDENT.

FOR a long time there have been sporadic movements in Germany, having for aim the centralisation of effort in school reform. Readers will remember the work of Hubner in Breslau with regard to the organisation of the school museums in Germany with a Central Bureau in Berlin. They will also call to mind the agitation for a Consultative Committee of Education for the Empire. As great progress has been made towards founding central stations for charitable work among children, there is some hope that the new movement, which originated in Breslau, will achieve some success. It is desired to form a neutral platform on which parents and teachers could meet. Here the problems which arise can be discussed, and their relative importance in some degree determined. Then a decision can be arrived at as to the extent and locus of any experiments which may be necessary to test the proposals. Among the problems which are already suggested for treatment are: those connected with *Erziehungsheime*, the reform of mathematical education, and the differences of training necessary for a primary-school teacher and a secondary-school master. The outline of the scheme provides for the establishment of a central office and branch offices affiliated with it, the arrangement of congresses, and the subsidising of a periodical. The proposal has been received with favour, but not with enthusiasm. There are many competing societies in Germany, and much effort is wasted through overlapping and rivalry. One speaker whom we heard welcomed the proposal. He said that he had to spend £30 per annum on subscriptions, was member of forty-seven societies, and president, or vice-president, of ten!

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As an antidote to literature dealing with vice and crime several foreign societies publish a list of books suitable for the young, and make arrangements for supplying them through the schools. Such a society, with a centre in Basel, has lately issued its twentieth annual report. In this it is stated that above three and a half million books have been sold, the total in the last year being 267,160, three volumes selling each to the extent of above 25,000. In a volume of 176 pages, "Mitteilungen über Jugendschriften," Verlag des Vereins für Verbreitung guter Schriften, 336 books are reviewed. They are arranged as books for children, books for young people, and books for adults. Some are in dialect, a few are translations, and all are within reach of a moderate purse. A collection of the names of publishers of cheap books and of popular "libraries" is appended. The volume is of value to anyone wishing to choose a reading book for a class that can read German easily.

* * *

IT is often difficult to deal with the employment of children of school age, especially when

the child is helping the parent. It appears that in Prussia there are many children engaged illegally: in Crefeld it is known that they number more than 360. In Charlottenburg, where complaints are frequent, the factory inspector has had printed extracts from the Acts, and these are exhibited in the class-rooms. A motion to imitate this example was made in Berlin, but the authorities thought it best to confine instructions to the notice-boards of the teachers' common rooms. Experience shows that no good result can come unless the school co-operates with the teacher. The latest proposal is to issue a schedule which children fill up under the eye of the teacher, who subsequently adds a private opinion on the child's physical capacity and educational progress. Even here there is much leakage, for the teacher will not expose himself unduly to the parents' wrath. A similar relic of human nature in a Prussian official is to be found in the control of the continuation schools. Attendance at these is compulsory, but many children escape the net, as certain officials lack either the power or the inclination to enforce a penalty.

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When the Zürich Handelsschule was reorganised ten years ago, it took rank as one of the chief higher commercial schools of the Continent. But the rapid development of commerce as a science, the recognition of commerce as a subject of university study, and the pressure of commercial developments, have rendered a revision of the curriculum necessary. Commercial schools have, as yet, none of the traditions which make for stability in the classical schools. At one time they were regarded as institutions preparing for apprenticeship, now their leaving certificate is often accepted in lieu of apprenticeship, and their pupils secure salaried appointments immediately on leaving school. The lower commercial school has practically disappeared. The introduction of an Apprentices Act, involving a compulsory examination, has stimulated the development of the Commercial Continuation School. At the same time it has increased the numbers and the duration of attendance at the Handelsschule, since the certificate of the latter exempts from the provisions of the Apprentices Act, and frees the employer from the irksome duties imposed. The alterations in the curriculum provide for bifurcation in the upper classes. Two sets of students are recognised: those who will be directly engaged in manufacture and sale; those who will be consultants—accountants, actuaries, bankers, &c. This reclassification has made a reduction of three hours per week in the time-table possible, a precaution which considerations of health demanded. Some subjects have been eliminated from the curriculum, among them Latin, which was included to suit the demands of the Chinese trade. The time given to Latin was scanty, and any increase involved competition with the Latin schools. Besides, the requirements of the Chinese trade were partly fictitious; a number of pupils only took the subject as a safeguard in case of a possible change of career. Now that beginners' classes in Latin are held at the university, the question is outside Handelsschule politics. As an indication of the success of the school, it may be mentioned that one of the Swiss banks last year offered to take over all the pupils of the senior class at the end of the school year.

* * *

The "Swiss Educational Year-Book" ("Jahrbuch des Erziehungswesens in der Schweiz") in its latest issue gives as a leading article an account of the organisation of education in the Confederation at the beginning of 1910. This account, which extends over 140 pages, begins with a survey of the relations of the Federal Government with the Cantons, and gives a short description of the characteristic features of education in the latter. Then follows an account of what is done in the four stages: (*a*) before, (*b*) during, (*c*) after the period of compulsory attendance, and (*d*) at special schools. A description of the institutions maintained by the Federal Government succeeds, and then comes a detailed account of the organisation of education in each of the twenty-five Cantons. The article represents a huge amount of labour, and is the completest account of its kind procurable. Among other features of interest are: the circular of the Federal Board of Trade relating to industrial continuation schools (December 15th, 1908), and the text of the new primary Education Act in Neuchâtel (November 18th, 1908), and of the secondary Education Act in Vaud (February 25th, 1908).

* * *

Visitors to Oberammergau who pass through Munich should not fail to see the Deutsches Museum, where some of the apparatus used by Otto von Guericke, Ohm, Liebig, and Bunsen is on view. At present the museum is housed in provisional buildings, but in 1913 it will have a palace of its own on one of the islands in the Isar, and the completed museum promises to outshine South Kensington. Evening parties are formed for visiting the museum, under the care of experts, who explain the exhibits of their special branch. These evening parties are advertised in the daily papers. The charge for admission is twenty pfennige, a double fee being paid if a conducted party is joined. Among the latest acquisitions is a complete set of exhibits relating to the science of aeronautics.

* * *

The first fortnight in October has usually been holiday time in Swiss secondary schools. This is a relic of the vintage, and has long been in disfavour with teachers, who would prefer a longer summer holiday. The Swiss Union of Teachers in Secondary Schools proposes to hold a holiday course at this time for its members, and has drawn up a programme of lectures on subjects connected with the leaving certificate examination.

PERSONAL PARAGRAPHS.

THE appointment of Dr. Fry, headmaster of Berkhamsted School, to the Deanery of Lincoln will be acclaimed by the educational profession. He has made his mark as headmaster of Berkhamsted, and as a headmaster among headmasters. It is no secret that among assistant-masters in secondary schools, Dr. Fry, who has always shown himself a sympathetic friend to the just aspirations of assistants, is as popular as any headmaster. He is in his sixty-fifth year. He took a second class in the classical tripos in 1868 as a scholar of Pembroke, Cambridge. He served as an assistant-master at Durham, and for thirteen years at Cheltenham under Dr. Jex-Blake and Canon Kynaston. While he was headmaster of Oundle his health broke down, but he has made a very successful headmaster of Berkhamsted since his appointment in 1887. In numbers, buildings, and efficiency the school has increased greatly, and there is little doubt that the town of Berkhamsted owes a great debt to Dr. Fry's enterprise. There are other sides to Dr. Fry's activities on which we cannot dwell here, especially his keen interest in Church affairs and his unflinching political support of the Liberal Party.

* * *

CANON E. B. H. JONES recently died during a voyage home from South Africa. He graduated from Jesus College, Oxford, taking second classes in "Mods." and Lit. Hum. After holding an assistant-mastership at Bromsgrove School and the vice-principalship of St. John's College, Battersea, he became headmaster of Michael House Diocesan School at Balgowan, Maritzburg, and was canon of Maritzburg Cathedral.

* * *

FROM South Africa also comes the news that Mr. W. A. Way, late classical scholar of Trinity, Oxford, and headmaster of Graaf-Reinet College, Cape Colony, has been appointed rector of the Grey Institute, Port Elizabeth. He has spent some twenty years in South Africa, having been appointed to an assistant-mastership at Elizabeth College, King William's Town, directly on leaving Oxford. From there he was elected head of Graaf-Reinet College. It may be remembered that Mr. Way, who has the courage of his opinions, expressed himself emphatically on the subject of the South African schoolboy when the British Association met in South Africa. He is a man of strong convictions and courage, and has deservedly won his way to the top of his profession in South Africa. He will have, apparently, plenty of scope for his qualities at the Grey Institute.

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A NEW hall and library have been erected at St. Felix School, Southwold, by past and present Felicians, as a memorial of the work of Miss Margaret Gardiner, the foundress of the school. Lord Stradbroke presided at the opening.

THE new headmaster of the Congregational School at Caterham is Mr. Allan Mottram, who has been a science master at the school for several years.

* * *

IT is announced that Mr. W. W. Asquith, brother of the Prime Minister, is about to resign his mastership at Clifton College. He was educated at the City of London School with his brother, took a first class at Oxford, and accepted a "temporary" post as assistant-master at Clifton under Dr. Percival. The "temporary" post expanded into one of thirty-five years' duration, and during this time Mr. Asquith has seen the *régime* of five headmasters, the present head, Mr. J. E. King, having entered the school as a boy when Mr. Asquith was a master.

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DR. A. E. HILLARD, High Master of St. Paul's, recently made a valuable protest before the Fulham Education Council against the tendency to reduce educational methods to a dead-level of uniformity. He hoped that any future change would not be in the direction of making teachers into machines, but of giving them more voice and more scope for the exercise of their discretion. Publishers of educational books, as well as education authorities, are only too apt to think that it is the apparatus and not the person that matters. This attitude argues a lamentable ignorance of a fundamental truth.

* * *

MR. RUNCIMAN at Manchester recently gave utterance to the same opinion as that referred to above from Dr. Hillard. He had come to the conclusion, he said, that in our secondary schools, at all events, it is impossible to get the best men for headmasterships unless they are allowed a greater degree of individual freedom than is given to the headmasters in other schools. He suggested that the posts in secondary schools should be made attractive to university men of high attainments who were not prepared to see their individuality suppressed. These are excellent sentiments, and they support that side in the eternal struggle between individualism and organisation that just now seems to need support.

* * *

DR. JOHN PEILE, the late Master of Christ's College, Cambridge, left his mark on one educational study at least, namely, the comparative study of the Indo-Germanic languages, and especially classical philology. He published the book which made his reputation, "Introduction to Greek and Latin Etymology," in 1869. This and his subsequent shilling primer presented the results of German investigation in such a way that young pupils could apprehend the subject. But the whole science of philology soon became revolutionised, and the "Introduction" is now out of date. After 1884, as University reader in philology, Dr. Peile revised his earlier judgments, recognising fully that finality in such a science was impossible.

He was born in 1838, and was educated at Repton School and St. Bee's Grammar School. At Christ's College, Cambridge, he won the Craven Scholarship in 1859, and formed one of a brilliant group of contemporaries, including Calverley, Seeley, Skeat, and Besant. He was tutor from 1870 to 1884, and wrote an excellent "History of Christ's College (1900)," having by that date been Master of the college for thirteen years. A large block of new college buildings was erected during his mastership. As a member of the Senate for thirty-three years he played an important part in the administration of the University, being connected with almost every forward movement, such as university extension and women's education. In the latter respect he was intimately associated with Newnham College: he took an active share in its foundation, served for many years as a member of its council, and since 1890 had been its president. This connection has been commemorated in the name of the new building of the college, Peile Hall.

ONLOOKER.

MENTAL AND PHYSICAL FACTORS INVOLVED IN EDUCATION.[1]

It is important to understand quite clearly whether or not there is a body of doctrine which can be separately regarded and called the science of education, or whether the schoolmaster's practice is to be based on contributions from various branches of science without any common centre of reference which shall give them the inner unity which belongs, for example, to such a science as agriculture. The particular point of view from which education interprets its subject-matter is so distinct from the points of view of the psychologist and the sociologist, for example, in dealing with the material of their sciences, that the independence of the science of education must follow.

Until the present time, however, although much has been written upon educational theory and educational procedure, there has been little or no attempt to deal with its materials in a scientific spirit. Its facts have not been collected in any orderly way; tradition, rather than the results of independent observation, has guided the schoolmaster in his class-room. The *a priori* view has dominated the mind of the educational reformer; he has, indeed, been most concerned with the question of the end to be reached, interpreting thereby the current philosophical and religious notions of his time in educational terms. The study of the persons to be educated and their attitude towards methods of instruction was left aside; it was sufficient to rely on the sympathetic intuitions of the schoolmaster. The position was unassailable so long as mental behaviour was regarded as something lying beyond the reach of exact objective methods of inquiry. The psychologist and the alienist have taught us that this is not the case. The application of mathematics to the solution of its problems is the latest indication of the probability that, in the last resort, mental phenomena are as obedient to law as the things of the material world.

In response to the request of the committee, various gentlemen whose names are well known as investigators in this field have expressed their views of the importance of the work.

Prof. Binet, of the Sorbonne, writes, after showing how the artist's study of anatomy should differ in character from that of the doctor, because their object is different:

"I think the same holds good in regard to the relations of psychology and pedagogy. We shall gradually learn what the real needs of teachers are. Abstract psychological knowledge is of no use to them. They require knowledge of quite a special character, such as will find an immediate application in instruction and education. They should have at command the means of recognising intellectual and moral types amongst children; means of measuring memory and of strengthening it; they should know how to estimate fatigue and how to counteract it. But few, if any, of the psychological treatises of the last twenty years satisfy a demand of that kind. It is therefore necessary for psychologists and teachers to set themselves to the task of creating a science, 'psycho-pedagogy,' which, at the present moment, does not exist. In pursuing inquiries of this kind it is essential that we should not lose sight of their object—namely, that of finding out things that will be useful to a teacher acting in his professional capacity. Everything which is not related to that end should be rigidly excluded."

Prof. Claparède, the fourth edition of whose book, "Psychologie de l'Enfant et Pédagogie experimentale," is now in the press, has written as follows:

"The means which must be employed by the educator are not given *a priori*; they are the outcome of experience. He is concerned in fostering and directing the development of his pupils and in imparting knowledge to them. It is therefore essential that he should know how this development takes place and how the knowledge he would impart is assimilated. These things science alone can teach us.

"The fact that human possibilities are increasing every day without any corresponding increase in the length of human life makes it more and more important to see that our systems of education are as economical and fruitful as possible. The pupil has neither time nor energy to fritter away. The science which can do most for the educator in this matter is the psycho-physiology of children. Such a science is as necessary to the teacher as physiology to the physician. This is so obvious that we need not labour the point.

"Some will urge that the experience which is admittedly essential can only be gained by practice. 'It is only by teaching that a good teacher will be made.' It is, of course, true that practice is essential to success in any art, but in this particular case it is surely necessary to reduce to a minimum the period of apprenticeship. The teacher who is left to master his art without any knowledge of the material on which he is working is reduced to experiments in which his pupils suffer. Not infrequently these experiments are very long and very injurious to generations of pupils who undergo them. Practice may in time make up for a want of theoretical knowledge, but the price paid for the period of ignorance is incalculable. What is still worse, the injury done is irreparable. If an incapable engineer builds a bridge which collapses the damage can probably be repaired—at any rate, the bridge can be rebuilt; not so a human mind.

[1] From the report of the committee, consisting of Prof. J. J. Findlay (chairman), Prof. J. A. Green (secretary), Prof. J. Adams, Sir E. Brabrook, Prof. E. P. Culverwell, Dr. W. Brown, Mr. G. F. Daniell, Miss B. Foxley, Prof. R. A. Gregory, Dr. C. W. Kimmins, Mr. T. Loveday, Dr. T. P. Nunn, Dr. Slaughter, Mr. Bompas-Smith, Dr. Spearman, Mr. Twentyman, Miss L. Edna Walter, and Dr. F. Warner, appointed by the British Association to inquire into and report upon the methods and results of research into the mental and physical factors involved in education.

"It is hardly necessary also to point out that practice makes many bad teachers. Their pupils' dislike marks their want of success; they themselves are embittered, and their influence is like that of a withering blast upon the vital energy of young plants. All this might have been avoided if the teacher had from the beginning known how children must be treated if they are to be his friends, and how to present the material of instruction in order to stimulate their interest instead of filling them with disgust.

"An experimental pedagogy is therefore an essential. It includes psycho-pedagogy, medico-pedagogy, and the hygiene of teaching. Here we are only concerned with psycho-pedagogy, that is, the psychology of the child applied to pedagogy. This science aims at furnishing the educator with a means for *diagnosis* and *prognosis*. Is this child intelligent? Is he backward? What are his dominant capacities? Is his bad work due to idleness, boredom, fatigue, or some passing disturbance? These are typical problems for diagnosis.

"What career shall this youth follow? Given his present capacities, can we foretell his future aptitudes? In what sort of post will he make the best use of his powers? These are questions which belong to what I have called psycho-prognosis.

"Psycho-pedagogy will also aim at providing the teacher with a right technique. It seeks to answer such questions as, How is judgment developed? How can overpressure be avoided? When should we begin to teach a child to read? How should the will be trained?

"It will also embrace other problems which concern particular subjects of instruction—an 'experimental didactic.' How should the beginnings of number be taught? What is the right way of teaching modern languages? &c."

Dr. Schuyten, pedologist to the city of Antwerp, himself the author of many researches concerning the child at school, has sent the following communication:

"Pedology is the synthesis of all the sciences which contribute to the exact knowledge of childhood. It draws its data from hygiene, anthropology, physiology, normal and abnormal psychology, pedagogy, and sociology. We have abandoned the idea, still not uncommonly held amongst schoolmasters, that the child is not a subject for accurate objective study. We know that his various activities, mental and physical, may be accurately measured, and that when teachers have realised this and have themselves been more scientifically educated, they will be in a position to understand and appreciate the possibilities of the subject.

"We are now in a period of transition, but the surprising number of researches published in recent years already make it possible to indicate certain general lines of work which I may condense as follows:

"A. (1) The great development of the biological sciences has shown that the experimental investigation of children may give more exact bases for the educational treatment of childhood.

"(2) It has been shown that the child must be considered as a biological object, obeying the same natural laws as other forms of organic and inorganic matter. Thus scientific investigation is possible and inevitable if we would obtain accurate data for educational procedure.

"B. It is possible at present to determine accurately:

"(1) The hygienic conditions for the sound treatment of children (ventilation, lighting, warming, &c.).

"(2) The psysiological bases of nutrition, movement, work, overwork, and fatigue.

"(3) The anthropometric laws concerning normal and abnormal physical development.

"(4) Mental data derived from normal and abnormal children and from animals, from which the laws that underlie psychological phenomena may be discovered.

"(5) The sociological phenomena of early life as observed in civilised and uncivilised peoples and in animals.

"(6) The educational applications resulting from the foregoing, as seen in the school, the family, and in nature.

"No science has in the past developed so rapidly as pedology. Its great importance was immediately and universally recognised, as we see from the fact that so many and so various institutions devoted to this subject have already been established. I can count on the spur of the moment in Europe alone sixteen child-study associations, twenty-one reviews devoted to child-study, eleven laboratories and institutes of pedology, and no fewer than eight congresses on various aspects of the subject have already met. In North and South America and in Japan the number of societies and journals is very great, but unfortunately little known.

"It is easy to foresee that in no very remote future the majority of the universities of the world will have established pedological courses with laboratory arrangements on thoroughly scientific lines."

In view of the large amount of work being done in other countries, the committee set out to inquire what was actually being done here, and what special resources were actually available. The committee knew of nothing to correspond with the Pedological Laboratory at Antwerp, but it was clear that the psychologists were beginning to take the matter up and that possibly more was going on than was generally known. The inquiry shows that special funds are rarely available; such work as is being done is chiefly in the hands of students who are working in the first place for academic recognition. Here and there privately interested people are working on their own initiative and at their own expense; otherwise inquiries are being for the most part conducted in the available time of university teachers, who are already occupied with the general direction of a laboratory or in doing other teaching work.

It appears that a considerable amount of work is being done in almost all the directions in which out-of-school research can help to solve the teacher's problems—the psychologist in particular is busy with investigations which concern the process of instruction very intimately. Indeed, it seems almost necessary to point out that there is just a danger of forgetting the sociological and ethical aspects of the educational problem—aspects not less important than the psychological. The whole field of experimental pedagogy has been virtually left out of account in this review, and, although we may expect to gain much by study of the results of laboratory work, it is, in the committee's view, quite likely that the gain to educational science will come as much from a study of the methods of the laboratory worker as from his achievements. In any case, those results will have to be selected and adapted to the special needs of the teacher and to the actual conditions of class-room work before they can be incorporated into any systematic body of doctrine which will in the future stand for the science of education. But class-room investigations that will bring results of any permanent value must be conducted with as near an approach to the rigours of exact science as the conditions will allow. It is in the hope of its producing a body of teacher-workers, capable of conducting investigations of that kind, that the present

tendency to give to the teaching of psychology a more practical and experimental basis should be welcomed. The committee has drawn up, as an appendix to its report, a list of typical problems which seem to them to call for systematic inquiry.

The committee wishes finally to direct the attention of the section to the urgent need for funds in the furtherance of educational research. The work is being done at present in this country under severe handicaps, both of time and money. So much is being accomplished in Europe and America that the national honour seems almost at stake. When may we hope to see such an institution as Teachers' College in our country—a great institution devoted to advanced pedagogical study and research? At least, in their view, the subject should be regarded as ranking with medicine and other university studies in this respect, and as needing the same financial support for purposes of research as other departments of knowledge. The needs of departments of education in universities are apt to be overlooked by the Treasury, which considers them already provided for from other funds, but grants from the Board of Education at present cover tuition fees only; they take no account whatever of the need for research.

APPENDIX.

TYPICAL PROBLEMS FOR RESEARCH IN EDUCATION.

A. *Questions of a Psychological Character.*

(1) The child as an observer—how far is he dependent upon inner factors for his direction?

(2) The capacity of children of various ages for receiving and resisting suggestion (*a*) from the teacher; (*b*) from books, pictures, physical environment; and (*c*) from other children. Contra-suggestion.

(3) The active and the passive type of child—their psychological characteristics. The possibility of determining other types.

(4) The varieties of imagery in the mental life of children, and its relation to methods of instruction—image types.

(5) The relation of the child's vocabulary to his mind-content, as shown (i) by his spoken, (ii) by his written words and sentences.

(6) The development of children's memory powers—types of memory.

(7) Attention—the problem of its development—types.

(8) Mental elaboration—association—the development of general ideas—ways in which children reason.

(9) The child's motor activities—the psychology of the child draughtsman—expression and representation—conventions and symbols—when do they appeal to the child?

(10) The psychology of the processes of reading, spelling, writing, number-work, &c.

(11) The psychological differences in children—normal and subnormal—the question of psychological diagnosis. Sex differences—are they fundamental or due to circumstances and training?

(12) The study of intelligence: (i) special forms of intelligence; (ii) the correlation of general intelligence with specific mind functions; (iii) intelligence and age—averages; (iv) tests of ability.

(13) The problem of formal training.

(14) The development of moral, religious, and æsthetic instincts, habits, and ideas in children.

(15) The psychology of children *en masse*. The educational influence of (i) the corporate life of school; (ii) self-government; (iii) school or class customs and traditions; (iv) school games.

(16) Character and temperament: (i) the determination of types; (ii) the classification of defects.

(17) Differences of ability in various social classes.

B. *Questions of more direct Pedagogic Character.*

(1) The more careful psychological analysis of the ideas involved in special school subjects—and the general problem of "psychologising" instruction in them; *e.g.*, history, geography, mathematics. The relation of the logical to the psychological treatment of the subject.

(2) "Economy" in methods of teaching various subjects.

(3) The relation of the curriculum to the individual child having regard to (i) its special abilities, (ii) the probable length of its school life, (iii) its future calling.

(4) The question of promotion—special treatment of dull and quick children.

(5) Fatigue. Length of school hours.

(6) Value of physical and manual training of a formal kind.

(7) Co-ordination of home and school life.

C. *Questions of Sociological Character.*

(1) Influence of schooling on the fluid organisation of society.

(2) Effects of education of different types on the moral condition of the community.

EDUCATION IN SCOTLAND.

THIS year's official reports on Scottish education prove the steady onward march of education in the northern kingdom. From the primary school to the university there is now provided a carefully articulated and co-ordinated system of education that may well challenge comparison with that of any country in Europe. In past years the policy of the Department has come in for severe criticism, mainly because it seemed disjointed and incoherent, with no guiding unifying principle running through it. The legislative stagnation in educational affairs paralysed to some extent the hands of the Department, which was able to disclose its plans only by shreds and patches. The passing of the recent Education Act has changed all that, and now, when the whole policy stands revealed, all interested in education are able to recognise its far-reaching possibilities, and are prepared loyally to co-operate in making it a success.

ELEMENTARY EDUCATION.

The passing of the Education Act of 1908 may justly be regarded as marking an epoch in the history of Scottish education. The far-reaching character of many of its provisions is only now beginning to be seen, and in the smaller educational areas numbers of school boards are bewildered and puzzled by the variety and delicacy of their new duties. The report of the Committee of Council on Education in Scotland for the year 1909–10 gives an admirable conspectus of the position established by the Act of 1908 as regards both educational organisation and the bodies and authorities responsible for its working. School boards, popularly elected for each parish or burgh, or for combinations thereof, still remain the fundamental authority for education. Experience, however, showed that there were functions which transcended the sphere of the ordinary school board, and accordingly the new Act established burgh and county committees on secondary education. The duties of these bodies are to co-ordinate the efforts (in the matter of secondary education) of all the boards of a given district, provide means for the better maintenance of central secondary schools, and facilitate attendance at

them from outlying districts. Even in the sphere of primary education these committees may discharge highly useful duties, particularly in regard to medical inspection, and to the provision of specialist itinerary teachers in subjects such as physical exercises, school gardening, manual work, and cookery.

SCHOOL BOARDS AND THEIR DUTIES.—General satisfaction is expressed with the manner in which school boards have discharged the duties imposed on them by the recent Act. Schemes of medical inspection have been set a-going in all the large urban districts, and in twenty of the thirty-three county districts. Remarkable progress has been made in establishing classes for the further instruction of young persons who have left school. The number of centres for such classes now exceeds a thousand. In two respects only has the action, or rather the inaction, of boards been criticised. Comparatively little advantage has been taken of the power to convey children in outlying districts to central schools, instead of leaving them to pick up a certain measure of education at small side-schools conducted by miserably paid, unqualified teachers. The other matter that comes in for criticism is the neglect of boards to establish agencies for aiding the parents of pupils leaving school in their choice of future employment. The School Board of Edinburgh is cited as a notable exception, and its work in this connection comes in for high commendation.

SCHOOL ATTENDANCE.—From the accompanying table it will be seen that the attendance has shown a steady increase during the past three years:

	1907	1908	1909
Scholars on register	811,000	812,346	826,223
Average attendance	711,228	712,076	727,244
Percentage of average attendance to number on roll ...	87·70	87·66	88·02
Infants, *i.e.*, pupils under seven, on roll	161,148	162,822	166,167
Older scholars, *i.e.*, pupils over seven, on roll	649,852	649,524	660,056

Of the 826,223 scholars on the roll, 11,255 were under five years of age; 154,012 were between five and seven years of age; 286,757 were between seven and ten; 349,526 were between ten and fourteen; 15,106 were between fourteen and fifteen; 8,667 were over fifteen.

SUPPLEMENTARY COURSES.—A notable educational development of recent years has been the attempt to add reality to the work of the primary school in its later stages by setting aside some time for correlating what has been already learned to its practical bearing on the probable future occupation of the pupil and the employment of his leisure time. This is the special function of the "supplementary courses," which extend over one or two years. During the year 1909, 57,234 candidates were approved by the inspectors for enrolment in supplementary courses or higher-grade departments, and during the same period 39,097 were returned as being in attendance at supplementary courses. Since the institution of these courses in 1900, remarkable progress has been made, as the following table proves:

Year	No. of Schools	No. of pupils in Supplementary Courses
1900	162	3,282
1901	361	7,648
1902	374	8,322
1903	398	9,713
1904	1,136	16,536
1905	1,375	22,620
1906	1,558	25,683
1907	1,721	29,868
1908	1,819	34,151
1909	1,899	39,097

SECONDARY EDUCATION.

Sir John Struthers' sixth annual report on secondary education is, like its predecessors, an intensely interesting document. 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.

In the opinion of the Department, the number and disposition of the centres of higher education are now fairly adequate to the national needs, and no great development in this direction can be looked for in future.

The report goes on to discuss very frankly the objections that have been raised against the policy of centralising higher education. The ideal of a secondary school in each parish is dismissed as Utopian, on the ground of expense. Efficiency and economy, it is held, can only be secured by a policy of concentration, and one or two secondary schools in each county should serve all the needs of the case. To meet the requirements of boys and girls of promise in rural districts a sum of £85,000 has been expended by the secondary education committees on maintenance and travelling allowances. In addition, there is a sum of £65,000 annually available for similar objects from various endowments throughout the country.

The weakness of this defence of Departmental policy is seen when regard is had to the distribution of these funds. In this instance it is a case of "to him that hath shall be given." The great urban centres with their ample facilities, practically at the doors of the pupils, for every grade of education absorb by far the larger portion of the funds, while only a miserable pittance goes to the rural districts and counties that require it most. It is idle to talk of equal opportunity for all classes of the community under existing conditions. The thing does not exist, and there is no possibility of it existing save by a complete reallocation of the grants for bursaries and maintenance allowances. The centralising policy of the Department has also been criticised on the ground that it necessitates children boarding away from home at too early an age. The report frankly recognises the difficulty, but points out that in a former generation lads of the same age were in the habit of leaving home for the university. In this way a spirit of independence and self-reliance was developed that often proved the most valuable element in their education. It is recognised that the temptations and dangers of city life have greatly increased since that time, but in the opinion of the Department the institution of a proper hostel system would solve all the difficulties of the situation. Unfortunately, however, the inauguration of a hostel system is not even in sight, and meanwhile the risks are very real and grave.

Taken all over, the statistics as regards the number of candidates presented for the intermediate certificate are highly satisfactory. The total number of presentations showed an advance on previous years, while the number of certificates granted was 4,003, as against 3,540 in 1909. The percentage of successes to presentations for the whole country was close upon 70. The figures for the leaving certificate were equally gratifying, 1,080 pupils successfully completing the full course of secondary education.

The following extracts from the report should prove of interest and value to teachers of the respective subjects.

ENGLISH.—It is pleasant to be able to note that, on the whole, the teaching of English appears to be in a healthy condition. The aims of English study are becoming more clearly realised. The older ideal of a formal rigid discipline within a somewhat narrow field is giving place to the conception of a training which emphasises breadth of

reading and the development of literary insight and appreciation. Advance is necessarily gradual, but almost everywhere real progress is being made by the closer co-ordination of the various relative branches of the subject, by the strengthening of proved weaknesses in the schemes of work, and, generally perhaps, by concentration of effort rather than by definite changes in the methods or in the material of study. In the last report allusion was made to the lack of balance and due proportion between the study of prose and poetry, and between the extensive and the intensive sides of reading. In many cases a serious endeavour has been made to correct this fault. This is particularly true of home reading, which has, in some instances, been reduced in amount where it was previously too extensive, and has in others been improved in quality and in educative effect. It is now rare to find the study of prose in class even comparatively neglected, although in many schools the prose books are still not studied concurrently with the poetry, but postponed until the later part of the session. Instances of want of judgment or good taste in the selection of texts are steadily becoming less common, although the tendency which was adversely commented on last year to choose for intensive study in the lower classes a long novel by Scott or Dickens is by no means extinct. Such fiction should, for the most part, be left to do its work unconsciously in the home reading.

Oral composition and oral paraphrasing appear to vary very much in merit. It is not altogether, or even mainly, a question of knowledge. Many pupils, undoubtedly very well informed and, as their written work testifies, very well taught, have apparently great difficulty in expressing themselves orally. Others, who may have less knowledge and perhaps less diffidence, may make a more brilliant appearance; but the point to be insisted on is that oral work in English is quite as important as oral work in the other modern languages, and for exactly the same reasons. The teacher who neglects full oral discussion of the literature studied, and prefers a system of lecturing and note-taking, or is content with indistinct monosyllabic answers and slovenly repetition of the poetry committed to memory, is undoubtedly leaving undone one of the chief parts of his work. With regard to the last point, it is not too much to say that more than half the value of memorising is lost if the pupil is unable to reproduce what he has learned in such a way that the hearing of it may give pleasure to others. It is true that the tasteful reading or recitation of prose and poetry is one of the most difficult of all arts to cultivate, but the force of example counts for much. It is true, also, that some allowance must be made for the self-conscious shyness of boys and girls in the higher classes, and it is just there that apparent speech deficiencies and difficulties are met with most frequently.

Composition was this year exceptionally correct on the formal side, but the general effect was somewhat dull. One common fault was prolixity. Quantity rather than quality seemed to be the aim of many. Yet it is better, even in an examination, to write well than to write much. The vice referred to appears especially in the long preambles. Many essays, too, were marred by want of simplicity, a weakness peculiarly fatal when a homely theme like "The General Merchant's Shop," which was this year the favourite subject, is developed in an unnatural literary jargon: "He departed without his umbrella, which I despatched after him," is a fair specimen. Again, few candidates show much power of varying the expression by the use of pronouns and similar devices. Sentence structure also is too exclusively paratactic. These are criticisms which may prove suggestive to teachers. The paraphrase—to use a time-honoured, if not strictly applicable, title—was better done than the corresponding exercises of 1908 or 1909.

It is quite evident that the practice of systematic home reading, which our visiting inspectors have for a year or two reported to be well established, is beginning to bear good fruit. The one common defect was a tendency to pass off a summary of the plot for a description of the character, another instance of that want of attention to the directions of which complaint has already been made. Among the remaining options, the question relating to King Arthur was seldom taken, and his romantic figure seems to be known to our scholars solely from Tennyson, and chiefly from his "Morte d'Arthur." Malory is apparently not read in Scottish schools. Not many chose to write of battle-songs, and the answers were remarkable chiefly for a tendency to attribute all such songs to "T. Campbell." A very fair number attempted the question on Burns, and showed considerable familiarity with his life if not much intimacy with his writings. It was not pleasing, however, to observe the constant stress that was laid on Burns's vices. One candidate even, when alluding to his intemperance, was so carried away by the didactic impulse as to add, "if it had not been for this sad habit we might have had him with us yet"! It is difficult to believe that teachers are to blame for moralisings of this sort. In all probability it is due merely to the censoriousness of youth. But if any Scottish teacher is in the habit of making Burns the "drunken Helot" of a homily he may be advised, in speaking of him to young pupils, to emphasise rather his struggle against temperament and circumstance, and, above all, the splendour of his poetic achievement. Surely no part of a poet's life is of such value to posterity as the part he has given to poetry, and time devoted to expatiating on Burns's shortcomings would be spent to greater advantage in reading a few more of his poems. "Tam O'Shanter" and the "Cottar's Saturday Night" were the only poems of Scottish life that were at all widely known.

FRENCH.—Our inspectors have little that is fresh to say regarding methods. There seems to be a continuous, if somewhat slow, advance towards a fuller use of direct teaching; but there is still a long way to travel before the direct method can be said to be receiving a fair chance. Its successful application requires not only a thorough familiarity with the language to be taught, but also unusual skill and vigilance when face to face with a class. The mere physical exertion is often severe, although it is sometimes unnecessarily increased by a teacher yielding to the temptation of doing too much for his pupils. Again, the true meaning of the word "direct" is not always properly apprehended. It is frequently forgotten that when once a word or phrase has been understood and acquired, the English equivalent should, so far as possible, be dropped out of sight, and the new material utilised only in its natural foreign setting. Where equivalent phrases are in question, careful comparison should be made, and the differences between the two idioms clearly brought out. The truth is that, while English equivalents for new words and phrases often have great value in this way, the habit of continuous translation into English is apt to be baneful, especially at the earlier stages. Translation into the foreign language is on a different footing. If it is sufficiently simple, and deals only in words and phrases, the rendering of which is already familiar—a condition which is all-important—there is no harm done.

Retranslation, indeed, ought to be far more in use than it is at present.

Another misapprehension with regard to the direct method reveals itself in the comparative neglect of writing. There seems to be no question that in some schools the extra stress laid on oral work has led to a superficiality and want of accuracy which come out unmistakably in the written work done. The old grammatical teaching has fallen into disfavour on account of its non-relation to practice, but systematic and constant exercise in the writing down of French forms of expression and paradigms cannot be neglected without grave after-consequences.

GERMAN.—From more than one quarter comes the welcome intimation that there are unmistakable signs of a revival of interest in German. There are two capacities in which its claims might attract the attention of managers. In the first place, there is no reason why it should not have the same opportunity as French or Latin of being made the basal language of the intermediate curriculum. This it is already in certain towns on the East Coast where trade connections tend to bring it into prominence, and the number of schools which are following such a plan shows a distinct tendency to increase. Even elsewhere than on the East Coast, however, the system deserves a trial. That is, where the pupils are numerous enough to justify division into sections in the first year after passing the qualifying examination, one section might be composed of those who preferred German. Boys and girls who commence the study of the language thus early, and pursue it earnestly for five or six years, ought to have attained a very reasonable degree of all-round proficiency before the time comes for leaving school; and it is naturally to them that we must always look for the best higher grade work. Apart from this contingent, however, there might well be in every large school a considerable proportion of the abler and more advanced pupils who would take up German within their last year or two purely for utilitarian purposes. Whether their bent be classics or mathematics or science, they will speedily find that a working knowledge of German is indispensable to a mastery of their main subject; and such a knowledge as would enable them to read any ordinary German book without difficulty could readily be acquired during the post-intermediate course, provided some relief were granted from the mass of subjects which have, under present conditions, to be studied at one and the same time on the higher grade level.

Definite symptoms of progress appear also in the actual teaching. Modern text-books and methods are being more largely introduced; the scientific treatment of pronunciation is becoming general; conversation is receiving greater attention; and very often the interest of pupils in German life and customs is keen. Where there are large classes there is not, on the whole, much divergence from the procedure employed in French. The direct method is sometimes more completely and successfully used than in French, sometimes it is less so. The fact that the classes are small and easily handled helps to account for the relatively better results of the written examination. This year the chief examiner reports that if the papers are not distinguished by any very marked degree of excellence, they show, at all events, that the study of German continues to be kept up in a number of Scottish schools with a creditable amount of success.

MATHEMATICS.—In mathematics our inspectors continue to report steady progress. In a large majority of the schools instruction has reached a very satisfactory level of efficiency. As a general rule, the efforts of the teachers are well directed and their methods sound, while the pupils' comprehension of the underlying principles is reasonably adequate. This condition of things is no doubt to be attributed in large measure to the circumstance that the material available for staffing purposes is fairly ample. Further, it is becoming more common to find the principal teacher exercising a real supervision over the work of his colleagues, as it is being more fully realised that such oversight is essential. When this control is thorough and judicious the quality of the work done is high, while the junior masters receive a training that is simply invaluable in performing their duties under the guidance of experienced and capable chiefs.

The advance in arithmetic recorded in previous years still continues. It is slow, but it would appear to be sure. There is still a good deal of inaccuracy in computation, and the ability to reason logically and correctly from data is often absent. Yet the carefully connected manner in which answers to questions are frequently arranged shows that the pupils are being kept on the right track, while it is now rare to find a heterogeneous collection of figures from which the answer is mysteriously evolved. The reluctance to work with decimals has not yet disappeared, although one is glad to be able to say that recurring decimals have ceased to be prominent. Approximate methods of calculation are not yet resorted to so freely as they might be. Generalised arithmetic, on the other hand, continues to make headway, and the barrier that formerly existed between arithmetic and algebra has been still further broken down. The other branches of mathematical study present no new features of importance. Perhaps less attention is paid to the composition of algebraic work than the matter deserves. Careless and inaccurate use of symbols and inconsecutive setting out of work are sometimes, it is to be feared, condoned. In geometry, much of what was said a year ago as to the general position still remains true. The remarks then quoted may be commended once more to the notice of teachers of the subject. As regards trigonometry, which is probably the least skilfully taught branch of elementary mathematics, the defects of the teaching are summed up by one of our staff under three heads. To begin with, the trigonometrical ratios are all apt to be introduced simultaneously, as if they were all equally important, and care is not taken to link the newer ideas to those already familiar to the pupil through his study of geometry and algebra. In the second place, the use of trigonometrical tables is deferred until a comparatively late period of the pupil's study instead of being introduced at the beginning, or, at all events, as soon as the notion of the cosine as the ratio of the length of the projection to the length of the projected line has been grasped. Lastly, there is too little discussion of problems from various points of view.

SCIENCE.—The reports of the inspectors regarding the work in science are, on the whole, of a satisfactory and encouraging kind. At the same time, it is obvious that there is still abundant scope for improvement. It may be worth while emphasising some of the more serious criticisms that have been made. Perhaps the most noticeable weakness is a tendency to neglect the teaching of scientific method in favour of the teaching of facts. Some teachers do not appear to realise that the latter ought to be quite a minor part of their work, and that unless they succeed in imbuing their pupils with something of the scientific attitude of mind they have failed in what ought to be their principal aim. One cause of this is a too

frequent recourse to demonstration where individual experiment is quite feasible and desirable. It would be helpful, by the way, if boys and girls were encouraged to do more in the direction of devising and setting up apparatus for themselves. Again, descriptions of the method of performing an experiment are often very stereotyped and bald, lacking any reference to the experimental precautions that must be taken to secure accuracy of result, to say nothing of the reasons why these precautions require to be observed. The need for discussion is still clamant in many schools. It is essential that attention should be regularly directed to the fundamental principles on which the experiments that the pupils have to perform depend. Not seldom questions put upon an actual experiment that had been creditably carried through revealed a regrettable lack of understanding as to what it was all about. Where that happens, the instruction in science has failed in its purpose. It is remarkable to see how much faith is shown in expecting a correct result from the average of a number of individual results differing so widely from one another as to be absolutely untrustworthy.

Several of our inspectors are inclined to doubt whether all schools devote as much consideration as is desirable to the content of the experimental science syllabus. A hint to that effect was given in last year's report, and it seems to have borne fruit in isolated cases. But there are still too many pupils, notably girls, labouring at branches of science which cannot possibly have any living interest for them. Few teachers, for example, think of drawing their experimental illustrations from domestic science, and there are not many who take advantage, as they might do, of the open book of nature. Even where nature-study is included, it is apt to be purposeless and disconnected. So treated, it is of comparatively little profit, and does not possess the disciplinary value to be gained from the detailed experimental study of questions previously made familiar through that general instruction in nature-study which ought to form part of the curriculum of every school, from the youngest classes upwards. There is here an opening which one may hope to see taken advantage of in the revised curricula for junior students which managers are at present understood to be considering. The minimum of science instruction which is to be obligatory on all junior students after the intermediate stage might very suitably resolve itself into a systematic consideration of simple botanical and biological problems.

EDUCATIONAL HANDWORK: AN EXPERIMENT IN THE TRAINING OF TEACHERS.[1]

By JAMES TIPPING.

THE Educational Handwork Association has during the last eight years conducted an interesting experiment in the training of teachers in educational handwork.

This vacational course has met annually during the month of August in the Municipal Secondary School, Scarborough, and has attracted an increasing number of teachers from every part of the British Isles, and not a few from the Continent, the Colonies, and America.

The aim of the promoters has been to make handwork better understood, and, indeed, to demonstrate its value and necessity in an ideal scheme of general education.

[1] Abstract of a communication to the Educational Science Section of the British Association at its Sheffield meeting, 1910.

The need for mind-training through muscular activities has been urged by educationists of all times, but administrators of education have not so readily appreciated the psychological aspect of the problem, and consequently have made the mistake of developing the work for its economic value rather than for any truly educative ends it might serve.

The purely utilitarian aspect of the various forms of manual activity has been the means of leading them away from the true intention of the work, with the usual result that the "means" have been mistaken for the "ends," the "avenues" to knowledge have been mistaken for the "goal." Manual training as an industrial training has no place in the ordinary school curriculum, but as a factor in mind development its presence is essential.

Probably the term "manual training" too readily suggests industrial activity, and to this extent it is somewhat of a misnomer; hence the reason why this association favours the title Educational Handwork, because it more readily expresses the essential difference between industrial activity and muscular activity, which leads to brain training.

The predominating feature of handwork is the use of a variety of tools and materials and the adapting of them to given ends. The more materials used the better, for each has its characteristic requirement in the way of handling and moulding into due form.

In the development of schemes the central ideal has been to give due consideration to the two points of view, namely, the technical and psychological. So far as children are concerned, the latter is essentially of primary importance, whilst technic as such takes only a secondary place; but from the point of view of the teachers' needs both are requisite.

Reference to the schemes of work on exhibition here will emphasise the fact that, whilst the technical courses provide for the development of the teacher's executive powers, every opportunity has been taken of developing suggestive ideas for the application of such knowledge to the children's needs. Power to initiate such schemes as will apply to the varying capacities of the children is what is aimed at rather than the following of set schemes worked in the training school and slavishly adhered to by the teachers when they go back to their own schools.

In the kindergarten, of all places in the school, psychology plays an important part, and in the summer school this is kept constantly in mind. A daily lecture is given, after which the various forms of manual expression, such as brush-drawing, claywork, raffia, paper cutting, folding, and mounting are discussed from the point of view of child psychology.

In clay-modelling, the objects which are of interest to children and the methods they would adopt in the making of such at different ages are taken into consideration in working out the course. The psychology of touch is appealed to in discussing the methods of handling the material.

In working out a brushwork course, the statistics with regard to children's ability to discriminate colours are appealed to; samples of children's own spontaneous work are examined, and the students are trained to analyse them, estimate their worth, and take hints for future guidance from them. Similarly in drawing and paper-cutting, the problem of the perception of distance and of the third dimension in objects is worked out, and the children's powers in these directions at kindergarten age discussed; the value and limitations of the different forms of colour and form are worked out and criticised from

that basis. In sewing and weaving the mechanism of visual adjustments is reviewed and made the basis for criticism of the use of such material as are utilised in mat-plaiting and calico for sewing for young children, so that the students are given definite reasons why sewing should be on coarse materials and with coarse thread, and why wool and raffia are superior as weaving materials to mat-plaiting.

The teachers are shown that the school occupations may easily be made extensions of the child's natural and instructive home occupations; he loves to thread beads, make marks with chalk or pencil, to splash about with colours, and in these directions his play may readily be developed and enriched by the proper use of such in school.

The first essential in the kindergarten work is to get rid of the idea of courses in different materials, the aim being rather to give the child ample opportunity to use a variety of materials in the expression of central-group experiences.

The first principle in dealing with kindergarten teachers is to train them to develop in the child the power of self-expression, and next to familiarise them with a variety of materials, so that they can constantly appeal to his powers of expression in these materials, and so strengthen his powers of selection and adjustment.

In the various schemes of work on exhibition it will be noted that the fundamental principles governing kindergarten methods are arranged and elaborated to suit the more mature development of the children as they pass through the different stages of school life. As the child grows physically and mentally the mode of approach varies somewhat, and the development of mind through the activities becomes an ever-increasing and more highly complex problem, but through the medium of clay, card, wood, and metal there is afforded an infinite variety of experiences that can be utilised to develop harmoniously the child both physically and mentally.

HISTORY AND CURRENT EVENTS.

THE kingdom of Spain is once more helping us to understand the reign of our King Henry VIII. He thought no more than modern Spaniards of changing the creed or form of worship of his country when he quarrelled with the Pope and took upon himself to set up another authority in the law of marriages. They are of the same mind as the Tudor King and his predecessors in reference to the wealth of the regular clergy. "They will have," says the Spanish Premier, "to lay down limits to the power of the congregations to acquire property, and they will establish forms that will facilitate State control." But they are going further than anyone in the sixteenth century when they say that education is not the function of any religious body, but is an attribute of the State. Further, not in the direction of setting up the individual State against the Universal Church or any part of it, for in that, the sixteenth century, especially in Protestant countries, was as far advanced as the twentieth, but in the increase of the activities of the State. Liberty is being curtailed, since the State, not the individual citizen, is to control education.

IT was but recently that we noted the advent of a new kingship to the society of Europe, and were asking who made kings. This month we have to chronicle the disappearance, at least for a time, of an old kingship, that of Portugal, and we are being taught who unmake kings. The process of forcible abolition seems to be regarded as a natural incident in politics. No one now comes forward like Saumaise or "More" to denounce such action, nor is there need for Miltons or Lockes to justify regicide or expound the doctrine of an original compact. A country which attained its existence under one line of kings in the Middle Ages, and recovered its independence under another in the seventeenth, and again in the nineteenth, century, now dismisses the institution in order to try new ways, because the people are dissatisfied with their Parliamentary rulers. Or is the real reason for the recent revolution the anti-clericalism which is showing itself in the action of the Spanish Ministry? Certainly, according to our latest information, the regular clergy are being expelled, and the Pope is exhorting the secular clergy to remain loyal to the kingship.

WE English people ought to be interested in Portuguese affairs. In 1147 some English crusaders stopped in the peninsula on their way to the Orient to help the first King of Portugal to capture from Mohammedan rulers the city which has ever since been the capital of the country. It was only because Portugal was ruled by Philip II. and his Spanish successors that Lisbon was the port of departure for the Armada of 1588, and Portuguese colonies were attacked by English and Dutch. When, in 1640, Portugal revolted against the Spanish yoke, England and her ally, France, were, largely for their own interests, it is true, friendly to the struggling Braganza dynasty. And we all know how Charles II. got Bombay with his Portuguese wife, and how in Anne's reign we began drinking port in preference to the lighter French wines, when, having changed our international policy with our "Protestant Revolution," we fought against Louis XIV. and his annexation of the Spanish dominions. The Peninsular War is a "household word," and there is a long, little known history of British connection with Portugal in the first half of the nineteenth century.

THE new Prince of Wales is to be installed at Carnarvon, the historical capital of the Principality, not at Cardiff, the chief commercial city, in Welsh Wales of the north rather than in the more English Wales of the south. In what sense is the heir-apparent to the British throne Prince of Wales? and Wales a Principality? Is he like the German Prince of Waldeck-Pyrmont or Duke of Saxe-Coburg-Gotha, who are sovereign rulers of principality or duchy, and members of the confederation known as the German Empire? or is he like the Duke of Norfolk or Earl of Essex, his future subjects, who, though they may probably own land in those counties, yet have no sovereign rights therein? There was a time in English history when earls were rulers in their counties, and the connection continued until after the Norman Conquest in the form of the "third penny" or share of the profits of jurisdiction. But the English crown soon became too strong for any local sovereigns. England, unlike Germany, attained unity, and these titles are now but titles giving only a share in legislation.

Tales from Irish History. By A. Birkhead. vii + 151 pp. (Methuen.) 1s. 6d.—The title misled us. But that is our only complaint. After the first chapter, which gives briefly three tragic myths, the book consists of the history of Ireland from early times to the introduction of Gladstone's first Home Rule Bill. Of course, in such narrow limits much is omitted, but the young reader will get a clear idea of the past, which is still such a real present, and accounts for our present difficulties. It is an excellent book for the school library. There are a map and an index.

ITEMS OF INTEREST.

GENERAL.

THE general committee of the International Moral Education Congress has decided that the next meeting of the congress shall be held at The Hague in the autumn of 1912.

THE annual council and general meetings of the Incorporated Association of Assistant-masters in Secondary Schools will be held at University College School, London, N.W., on January 11th, 12th, and 13th, 1911. The annual dinner of the association will be held at Blanchard's Restaurant, Beak Street, London, W., on January 12th at 7.30 p.m.

AT a recent meeting of the Education Committee of the Lancashire County Council, the chairman of the scholarships subcommittee announced that only two candidates entered for two domestic scholarships of the annual value of £60 offered for competition. One candidate only qualified for a scholarship. The chairman very properly went on to say that it was time the committee considered the possibility of securing a wider candidature or the desirability of withdrawing the scholarships.

MR. LLOYD GEORGE, when laying the foundation-stone of a new wing at Penrhos College for Girls, said: "The teachers ought not to be worried about the prospects of having daily bread for themselves and their children, and whether they will be able to earn it the moment they break down in health. It is quite as much as they can do to teach the children, and they ought to have their best brains and their best energy and the best heart for their work, and their heart-strings ought not to be worn and torn until they are ragged when they go to school about the anxieties of their daily bread. Germany has solved that. . . . I do not believe in copying Germany. I believe in going one better." It is difficult for teachers in England to realise what it would mean "to go one better" than Germany in the matter of pensions. Every Oberlehrer (secondary-school master) in Germany is entitled to a pension after a few years' service—the number varies in different States, but in none is it more than ten. The amount of the pension is from 75 to 100 per cent. of the final salary, and in more than half of the States no deduction is made from salary in respect of pension. Further, in practically every State the widow and children of deceased Oberlehrer are entitled to liberal allowances. In Bavaria—the State Mr. Lloyd George mentioned—a master is entitled to a pension on the completion of three years' service; its amount is 70 per cent. of his last salary up to the beginning of the eleventh year of his service, and increases to 100 per cent. in the forty-first year of service, or when he reaches seventy years of age. In this State an annual deduction of £2 14s. is made from the salary while it is below £216, and £4 9s. 9d. when more than £216. Among German States, Bavaria is not the teachers' elysium; and "to go one better" than Germany is the aim of the Chancellor of the Exchequer. May he succeed!

THE number of efficient secondary schools earning grants from the Board of Education in 1908–9 was 804. The first part of "Statistics of Public Education in England and Wales," 1908–9, which is now available, shows that 346 of these schools were for boys only, 277 for girls only, and 181 for boys and girls. The number of masters engaged in teaching in these schools on January 31st, 1909, was 4,338, and there were 4,098 schoolmistresses. The pupils numbered 135,671, and 73,270 were boys. Of these boys, 19,054 were under twelve years of age, 49,600 were between twelve and sixteen years of age, 4,284 were sixteen years of age and under eighteen, while 272 were eighteen years of age and over. The corresponding numbers in the case of girls were 14,661, 39,967, 7,039, and 734. Of the 804 schools, 296 were council schools, 29 were girls' public day school trust schools, 42 were Roman Catholic schools, and 437 foundation and other schools.

AT the recent annual conference of the National Federation of Assistant Teachers, held at Newport (Mon.), Miss E. Phillips, the first lady to preside over the association, dealt in her presidential address, among other subjects, with the domestic training of girls. Much of what goes to make up wholesome, healthy, and refined home life is controlled by the women in the homes. But, as she said, it is a great mistake to think that the multifarious and difficult domestic duties can be performed efficiently without due preparation. It is a matter for regret that many preventable physical and moral miseries are due to the lack of training of women in the homes. Immediate steps should be taken to remedy this defect of home life in order to prevent any ill effects on future generations. The great majority of the present-day mothers have passed through elementary schools, but in the education they received little attention was paid to the needs of the home. Girls in our schools to-day cannot be expected to do any better than their mothers unless the domestic side of their education in school is developed suitably. A systematic and efficient training in the domestic arts should be considered an essential part of every girl's education. The urgency of the need for this domestic training in our elementary schools is shown by the statement, made on trustworthy authority, that 91 per cent. of women are engaged in domestic duties either as wives, daughters, or servants. No woman would shrink from becoming well qualified to perform these essentially womanly duties.

MISS PHILLIPS went on to suggest that the whole of the work of girls' elementary schools should be modified and readjusted, and that a scheme of lessons relating to home life should form an essential part of the curriculum. It is advisable, she urged, to devote half the time of the last two standards of an elementary girls' school to the study and practice of the domestic arts. Some critics say that many of the girls in our schools become "domestic drudges" soon enough. When these girls know how to economise labour by the proper performance of household duties there will be far less likelihood of their developing into "domestic drudges." Slight and inadequate alterations have been made from time to time in respect to girls' schools, but now that women are on local education committees, on the Consultative Committee to the Board of Education, and in other important positions where their influence must be felt, the training of girls will no doubt be placed in its true position.

THE educational welfare of children who, by reason of certain chronic ailments or defects, are unfit for the rough-and-tumble conditions of ordinary school life, must be promoted, both for the sake of the individual and for that of the State. Crippled children are particularly worthy of special treatment: they cannot take part in the games and physical exercises of their fellows, though they may excel in mental tasks or manual work. Obviously, the best place for such children is a school—residential, if possible—where they can be inspired with courage to fight

against their handicap in the battle of life, and be equipped to support themselves by a thorough training in suitable crafts. Pioneer institutions of this type are "The Heritage" schools of arts and crafts for crippled boys and girls at Chailey, Sussex. The schools were founded through the energetic advocacy of Mrs. Kimmins, and their work is recognised by inspectors of the Board of Education, and others familiar with it, as being of a most valuable character. An appeal just made by Princess Louise, Duchess of Argyll, on behalf of the school for boys should therefore meet with a generous response from all who realise the satisfaction and the importance of providing opportunities for the development of the best powers of the cripples. For the provision of buildings suitable for modern requirements a sum of £5,000 will be required, half of which has been promised or guaranteed by a few friends conditionally on a sufficient sum being raised to proceed with the necessary alterations and extensions. Any of our readers who can assist in placing the school on a satisfactory basis by contributing directly or indirectly to the fund for the new buildings will be sure of supporting a worthy undertaking. The president of the schools is the Bishop of London, and the honorary treasurers Lord Llangattock and Miss Alice Rennie, 36, Westbourne Terrace, Hyde Park, W., who will be happy to receive contributions.

BEFORE the end of the year Messrs. Longmans, Green and Co. will publish for the Association of Headmistresses a book dealing with the curricula and aims of public secondary schools for girls. The volume has been compiled under the direction of a subcommittee of the executive of the association, of which the chairman is Miss M. A. Douglas, headmistress of the Godolphin School, Salisbury. It will contain papers on all aspects of the work of girls' schools, and should be of great value, not only to teachers directly concerned with the work, but also to readers having a general interest in educational aims and methods. The papers on each subject have been prepared by a writer who has made that subject her special study, with the assistance of other experts. The concluding papers are two on aims and ideals in education, and suggestions as to possible reforms, read by the chairman of the curricula subcommittee of the association before the last two annual conferences. A paper on the rise and development of public secondary schools for girls is from the pen of the president of the association, Miss S. A. Burstall, whose works on "English High Schools for Girls" and "American Education" have met with a widespread welcome. The subject of the use and abuse of examinations has been entrusted to Miss F. Gadesden, headmistress of the Blackheath High School, who, when president of the association some years ago, first put into active shape the deep-rooted discontent felt by the heads of girls' schools with the evils of the present examination system. The report does not pretend to offer a final word on any subject dealt with; but at a time when the value of education and of educational experiments, and also the true sphere of women's work for the Empire, are recognised as matters second to none in importance, the work cannot fail to prove serviceable to a wide public.

WE hear a great deal nowadays of the declining birth-rate; the graver question of infantile mortality attracts less general attention, and but few people realise the appallingly large proportion of children who die under five years of age, or are aware that the ignorance of the mothers as to the proper methods of treating infants is mainly responsible. The paper on "The Teaching of Infant Rearing to Mistresses and Pupils," which Mr. Alderman Broadbent, ex-Mayor of Huddersfield, contributed to the International Congress in School Hygiene held in Paris in August last, is an earnest plea for the systematic instruction of all girls from ten to thirteen years of age in the essentials of what has been called mothercraft. The author rightly protests against an educational system which treats girls as if they were "an inferior kind of boys," and ignores "the one greatest certitude of their lives." The simple instruction advocated—how to feed and clothe babies and how to keep them clean—could be given by any intelligent woman; it is admirably summarised in Mrs. Watson's "Lessons on the Care of Infants" (to be had, 1*d.* each or 9*d.* a dozen, from Mr. Broadbent, Gatesgarth, Lindley, Huddersfield). To make time for such teaching, Mr. Broadbent would "even cut out one or two arithmetic lessons."

AT the recent International Library Congress in Brussels, Mr. Harry Farr, librarian of the Cardiff Public Libraries, read a stimulating paper on library work with children. He maintained that the essentials of a children's library system are: (1) the provision of libraries in the public schools for children during school life; (2) the provision of separate reading-rooms, or halls, in the libraries for children; (3) the provision of juvenile sections in the libraries for older children after school life. The new type of children's reading-room in the public library, he said, consists of a lofty, well-lighted hall as large as the general reading-room. Its walls are lined with book-cases of a height suitable for children, well stocked with good books. Part of the wall space is reserved for picture show-cases with sliding glass fronts, while higher up are hung well-selected colour prints. Every detail is carefully thought out to make the room attractive. Cleanliness is insisted on, and a lavatory is provided for children to wash if necessary. In charge of the hall should be a lady superintendent, or, as she is known in America, a "children's librarian." For this position a sympathetic, specially qualified woman is required. The influence for good of an enthusiastic superintendent can hardly be exaggerated, and her work is one of the highest forms of social service.

AT the end of 1909 there were in operation in Queensland 1,059 State schools, 79 provisional schools, two schools for aboriginals, and a reformatory school. The total number of schools open during the year was 1,164. The net enrolment was 94,097 in State schools and 1,500 in provisional schools, showing an increase of 1,404 for all schools. The average daily attendance was 73 per cent. of the net enrolment, an increase of 1·6 per cent. on the return for 1908. Of £330,619, the cost of primary education, the sum of £14,985 was for administration and inspection, £297,816 was for State schools, £6,845 for provisional schools, and £5,042 for itinerant teachers. The expansion of the system of scholarships to technical colleges, and the desire to extend the benefits of secondary education, may involve a reconsideration of the present system of awarding scholarships to secondary schools. Now there are fifty-two open scholarships—forty for boys and twelve for girls (exclusive of bursaries); these scholarships entitle the holder to attend for three years any secondary school in the State approved by the Governor in Council. The fee paid by the Queensland Education Department on account of each of the scholarship holders is £12 12*s.* per annum. In addition to these scholarships there are fifty district scholarships. Five of these scholarships are allotted to each of the ten grammar schools, and, in consideration of a fixed payment of £250

per annum to each of the schools for district scholarships, no payment in the way of individual fees is made by the Department on account of the holders of district scholarships. The system of itinerant teachers was introduced in 1901. The itinerant teachers travel in the sparsely settled districts, where there are neither provisional schools nor part-time schools, and the children whom they try to reach are those belonging to selectors, graziers, stockmen, boundary-riders, grooms, fencers, carriers, timber-getters, fossickers, and the like, who are unable to pay for tutors or governesses or to send their children to schools to be educated.

THE Singer Sewing Machine Company, Ltd., have had many applications for the second series of their Cathedral Views. This second series will be sent to applicants as soon as ready, which will be some time towards the end of the year. Any of our readers not having had the first series, to which reference was made in our July issue, should make early application to Singer Sewing Machine Company, Ltd., 42 and 43, St. Paul's Churchyard, London, E.C., as there is still a small supply left.

WE have this month to welcome another new educational periodical. *The Child* is published by Messrs. John Bale, Sons and Danielsson, Ltd., and edited by Dr. T. N. Kelynack. Its price is 2s. net monthly. The editor defines the object of the new magazine as being "to provide an authoritative and representative journal for the collection and interpretation of all subjects relating to child life. It seeks to serve as a sort of clearing house for the ready transfer and exchange of reliable information concerning truths relating to childhood, and it will constitute a form of institute for child welfare." Students of child life will welcome the varied contents provided in this first issue, and will find the magazine invaluable as a record of the progress made in our knowledge of children.

WE have received the "London University Guide and University Correspondence Calendar, 1911." The private student unable to attend lectures at a suitable college and anxious to graduate at the University of London cannot do better than take advantage of these carefully arranged correspondence courses, of which full particulars are here given. The remarkable success of students who have followed the instructions of the tutors of this institution should prove the best encouragement for the private worker.

THE attention of schoolmasters and schoolmistresses may be directed to the "Cambridge Pocket Diary for the Academical Year 1910–11," which has now been published by the Cambridge University Press. Its arrangement according to the school year makes it particularly suitable to their needs, and the data it provides are just what they require.

SCOTTISH.

THE thirty-fourth annual general meeting of the Burgh and Parochial Schoolmasters' Association was held this year in the Royal High School, Edinburgh. Much water has flowed under the bridge since the association was formed, and to-day "but a few veterans are to the margin come." Every year sees great gaps made in its ranks, and the shadow of impending dissolution hangs like a pall over all its proceedings. Mr. Low, Temple, the retiring president, in a finely conceived and phrased address, said that the time was at hand when they would have to consider the winding up of what was at one time a potent power in Scottish education. In looking back over the last half-century he was satisfied that very real progress had been made in many directions, though it was difficult to judge them from an unbiassed point of view. They were all inclined to be *laudatores temporis acti*, and long for the golden days of their young manhood, but they had to recognise that

> "New occasions teach new duties,
> Time makes ancient good uncouth,
> We must onward still and onward,
> Should we keep abreast of truth."

While he conceded to each age the right to have its own ideals and aims, he ventured to offer one word of criticism on present-day education. It seemed to him that many of the new developments did so much for the pupils and for parents that they were disinclined to make any effort at self-help. No advance in knowledge and no increase in material prosperity could make up for the loss of the sturdy spirit of independence and self-reliance that had hitherto been the heritage of all Scotsmen.

THE Edinburgh School Board has given another proof of its progressive character by arranging a special course of practical training for its continuation-class experts, many of whom have had no previous experience of class teaching. In Saxony, which may be regarded as the home of continuation classes, the training of teachers for this special work was undertaken first, and only when an adequate supply of fully equipped teachers was available were the classes begun. In this country, true to our national habit of "muddling through," the whole scheme of adolescent training is set a-going without ever a thought being given to the supply of teachers. While the day-school staff will be found suitable for a considerable portion of the work, skilled, practical men in close touch with the methods of local industry must be at the head of the trade classes. But to do effective work they must have some knowledge of the methods of class management and of the main principles of educational practice. It is to secure this that the Edinburgh course of practical training has been arranged. The better way would have been to have the teachers already prepared, but, after all, the main theory is to recognise the need for training and to make provision for it. Other school boards have not yet recognised even the necessity for it.

THE beginning of October finds the winter session of the continuation schools in full working order. School boards all over the country have made special efforts to popularise their classes, and from most centres come reports of a gratifying increase in the attendance. Employers are co-operating heartily with the school authorities, and in many cases are freeing their young employees from overtime and allowing them away earlier on class nights. Others are promising an increase of wages to those who make satisfactory progress during the session, and are offering medals and prizes for competition in the classes. Wisely enough, school boards are showing extreme reluctance in putting into operation the compulsory clauses of the recent Act, and only if all else fails will recourse be had to so unpopular a measure.

THE annual general meeting of the Educational Institute of Scotland was held this year in the Synod Hall, Edinburgh. The attendance was the largest in the history of the institute. The hall was crowded with delegates, and the galleries gave accommodation to a large number of non-delegates. Mr. Geo. Fenton, Aberdeen, the retiring president, delivered an address worthy of the occasion. Dealing with the question of the size of schools, he said that no system of education could be regarded as approximately ideal which herded boys and girls in barrack-like erections, such as were the majority of city schools. Dr. Scougal, H.M. chief inspector of schools, had stated that

no school should have a roll of more than 500, yet every month schools with three times that number were being opened amid a chorus of congratulation and applause. Schools of that size, equipped and staffed on the most generous scale conceivable, were no true nurture ground for the youth of the nation. "They had a name that they lived but were dead." The secretary's report showed that the membership of the institute is now 13,000, as against 5,000 in 1902. The limit of expansion has not yet been reached, as there are still 6,000 elementary-school teachers outside the ranks of their professional association. Mr. James Beattie, Oban, was unanimously elected president for the ensuing year.

SIR JAMES DONALDSON, presiding at the opening ceremony of the winter session, St. Andrews University, referred specially to this being the 500th year of the existence of the University, and intimated that the event would be celebrated in September, 1911. Owing to the benefactions of the Carnegie Trust and the additional grants received from the Treasury, it was a source of satisfaction to him to know that the visitors who came from all parts of the world to celebrate this 500th anniversary would find the old University in the full vigour of a second youth.

A CIRCULAR has just been issued by the Education Department intimating that the next written examination for leaving and intermediate certificates will begin on Tuesday, April 4th, 1911. Only those pupils will be admitted to the examination who have been in regular attendance at a recognised secondary school from January to the date of the examination, and no certificate will be awarded to any pupil who does not continue in attendance until the close of the session in June or July. The Department again deprecates the presentation of pupils in isolated subjects. Every candidate admitted to the examination is expected to have some definite form of group certificate in view.

IRISH.

THE exhibition and prize lists of the Intermediate Board in connection with the examinations last June may be summarised thus:

EXHIBITIONS.

Boys.

Grade	Classics	Modern Languages (with Irish)	Modern Languages (without Irish)	Mathematics	Exp. Science	Total
Senior	11	5	3	7	14	40
Middle	14	7	7	14	14	56
Junior	23	19	12	16	26	96
Total	48	31	22	37	54	192

Girls.

Senior	0	5	9	1	2	17
Middle	1	16	14	2	4	37
Junior	0	22	13	6	7	48
Total	1	43	36	9	13	102

PRIZES.

Boys.

Senior	4	11	4	8	27	54
Middle	12	29	5	10	39	95
Junior	11	31	3	13	48	106
Total	27	71	12	31	114	255

Girls.

Senior	0	5	6	1	3	15
Middle	0	8	9	8	5	30
Junior	0	15	13	—	3	31
Total	0	28	28	9	11	76

These figures represent the actual number of prizes and exhibitions awarded, as a very considerable number of candidates qualified also for rewards in other courses besides those in which they received their prizes and exhibitions. The number of exhibitions is larger than last year, when the boys received 192 and girls 90, a total of 282; but the number of prizes is very considerably reduced, as last year boys received 479 and girls 101, a total of 580.

THE Protestant Schoolmasters' Association held its annual meeting early in October in Dublin, the president, Dr. Connolly, of Waterford, in the chair. The honorary secretary, Mr. H. S. McIntosh, of the Methodist College, Belfast, reported on an interview which he and the Very Rev. A. Murphy had with Mr. Birrell on July 13th. They were introduced by Mr. Redmond, accompanied by Messrs. Dillon and Boland. In some respects the interview was satisfactory, for although Mr. Birrell held out no hope of granting the additional £70,000 which is required to bring the sum allotted to Irish secondary education proportionately up to the level of the grants to England and Scotland, yet he undertook to use all the influence of the Irish Government to secure an additional £24,000, which would bring the whisky money up to the point it reached six years ago.

PERHAPS the most interesting feature of the meeting was the reception of Mr. Condon and Mr. Johnson as a deputation from the Association of Secondary Teachers, who stated that their association was proposing to hold a public meeting in Dublin to urge that the extra £70,000 be granted, and wished to obtain from the Schoolmasters' Association support in favour of the registration of teachers, security of tenure, and a pension fund for intermediate teachers, all of which they thought could be initiated if the £70,000 were paid. Their views met with a favourable hearing.

AFTER a long discussion on the present courses, the association voted unanimously in favour of the introduction of Latin into the modern literary courses, with the omission of the word modern, thus making the first division to consist of French or Latin and Irish, and the second division of any two of the following: Latin, French, German. It also voted in favour of asking the Intermediate Board to insist on the use of the reformed pronunciation of Latin in Irish schools. Suggestions were also passed for the introduction into the programme of précis writing and copying manuscript as a pass subject, and for including mental arithmetic in the arithmetic examination. The meeting further protested, as before, against the rule preventing a pupil from passing a second time in the same grade, and also urged the reintroduction of the principle of averages.

THE Classical Association of Ireland has held this autumn a series of four archæological lectures, illustrated by lantern views, in order to show how the resources of archæology may be used in secondary schools to illustrate the classical authors. These lectures were given in the Hall of the Royal College of Physicians; the first was by Prof. Burrows, of Manchester University, on "The Dawn of History in the Mediterranean"; the second by Prof. Goligher, of Trinity College, on "The Daily Life of a Roman"; the third by Prof. Browne, of University College, Dublin, on "The Historical Value of Ancient Coinage"; and the last by Prof. Frost, of the Queen's University, Belfast, on "Military Organisation."

THE Queen's University, Belfast, has added to itself a faculty of commerce, consisting of a professor and

lecturers in commerce. In addition, an advisory committee will be established, including representatives of the Chamber of Commerce, the Corporation, the Library and Technical Instruction Committee, the Harbour Commissioners, the Linen Merchants' Association, the Institute of Bankers in Ireland, the Society of Chartered Accountants, and the Northern Law Society. It is proposed to grant a degree in commerce to students taking a three years' course, and a diploma to students taking two years. The courses will include the principles of commerce, the organisation of industry and commerce, modern history, commercial law, accounting, and political science.

School Hygiene for October has for its first article one entitled "The School Dens of Ireland," in which attention is directed to a subject mentioned in these columns last month, viz., the unsuitability of many of the school buildings used for national education. The article begins: "Nothing could be more distressful than the hygienic atmosphere in which the teachers and pupils of the majority of the 'national' schools of Ireland live and move and have their educational being. It is as non-conducive to educational progress as it is unfavourable to health. It repels children from school and shatters the health of teachers. It is one of the acute problems of Irish education." These statements are amply borne out by the facts given in the article. And yet the Treasury refuses the request of the Commissioners of National Education for money to provide proper schools.

WELSH.

MR. HALDANE, Secretary of State for War, in his inaugural lecture of the session 1910–11 at the University College of Wales, Aberystwyth, described Wales as possessing the gift of imagination, enabling her to strike out distinctive lines for herself in higher education and religion. The Welsh were not easily daunted with difficulties, and they acted together with an enthusiasm which penetrated to the humblest classes of the community. He regarded the English as lacking in ideas, whilst it is just ideas that Wales and Scotland can contribute to the common stock—especially such ideas as have been the origin of the remarkable power which the Welsh and Scottish universities are showing to-day of permeating the people around them with the influence of the higher learning. The development of the true spirit of the university among a people was a pretty good measure of the development of its soul, and consequently of its civilisation. Mr. Haldane's lecture was then devoted to the theme of the university as the index showing the soul of the people.

ABERYSTWYTH has received a visit also from Mr. Alfred T. Davies, the secretary to the Welsh Department of the Board of Education, on the occasion of the opening of the extension of the Alexandra Road Council Schools. Mr. Davies said that as he sat in Whitehall and read the reports of H.M. inspectors his heart often went out to the moorland shepherd and the lowland farmer on the slopes of Plynlimmon and the hills of Eryri, to the small shopkeeper and village carpenter, whose sons could not taste the allurements of a larger world which lay beyond; and he commended the education authority in Cardiganshire for establishing its system of school libraries. Of what use was it to teach children to read up to a certain age unless they were provided with something to read and shown how to read in a way which would benefit them and the nation? He advocated a National Home-reading Union and the foundation of reading circles. Thus they would set up almost unconsciously a poor man's university for Wales, in co-operation with the Eisteddfod.

AT the last meeting of the Merthyr Education Authority it was resolved to supply railway tickets at the beginning of each term to pupils from the lower district attending the advanced elementary or intermediate schools.

THE Cardiff Education Committee, through its chief inspector, has employed during the last twelve months the senior Welsh teacher under the council for a considerable portion of his time in paying visits of inspection to the classes taught Welsh by the peripatetic teachers. The chief inspector has further asked the committee to allow him to depute the same senior Welsh teacher to inspect the Welsh classes taught by class teachers as well as those taught by peripatetic teachers. The committee agreed to this. At a general meeting of the Cardiff Certificated Class Teachers' Association a strong protest was lodged against this "bureaucratic" method of appointment, instead of first inviting applications from all qualified teachers.

THE Cardiff Church of England Group Committee of Management having had its attention directed to the small number of scholars in Church schools presented for free scholarships at the secondary schools, has come to the conclusion that the difficulty at the root of the matter is the poverty of the parents. The committee was of opinion that it was desirable to make the scholarships of sufficient value to allow for home maintenance, even if that course restricted the number granted, and it was decided to make representations to the Education Committee on these lines, emphasis being laid on the fact that the poor child was seriously handicapped in the education field of competition owing to the inadequacy of the scholarships allowed.

THE seventeenth annual Conference of the National Federation of Assistant Teachers was held this year at Newport, and for the first time a lady was president, viz., Miss Phillips, of Cardiff. In her presidential address Miss Phillips stated that some of the very worst authorities in employing ill-qualified teachers were to be found in Wales. The percentage of certificated teachers in England and Wales was 51·3, but in Wales alone it was only 38·4. "Democratic Wales" (so called), instead of asserting herself on behalf of the many, was stinting her elementary schools and devoting her best energies towards the secondary schools and the few.

NEW GEOGRAPHICAL PUBLICATIONS.

(1) *Questions on the Senior Geography.* By F. M. Kirk. With Statistical Appendix by E. G. R. Taylor. 64 pp. (Clarendon Press.) 1*s.*

(2) *A School Economic Atlas.* By J. G. Bartholomew. With Introduction by Prof. Lyde. More than 100 maps and diagrams. (Clarendon Press.) 2*s.* 6*d.*

(3) *Planisphere of the Earth.* By G. F. Morrell. (Philip.) 7*s.* 6*d.*

(4) *Wall Map of the United States.* Orographical. 72×48 in. (Philip.) 14*s.*

(5) *Wall Map of the Basin of the Thames.* Orographical, unlettered. 40×52 in. (W. and A. K. Johnston.) 12*s.*

(6) *Wall Map of the Basin of the Thames.* Orographical, lettered, roads and railways inserted. 40×52 in. (W. and A. K. Johnston.) 12*s.*

A COLLECTION of questions is always useful to the teacher of geography; it saves him much time and trouble, and drives home his lessons in a very practical form. But the questions should be of the right sort. They should be many, well printed, and suggestive of concise answers; above all, they should not demand essays in response. Miss

Kirk's booklet (1)—the "Senior Geography" is, of course, Dr. Herbertson's—seems to us to err in this last-named respect. Though some of her questions are unimpeachable, a large number are hardly of the type that the schoolmaster or -mistress wants. "Discuss the value of the rivers to China proper," and "Give an account of the agricultural industry of Italy," seem to invite vague writing, and are not nearly so effective as "Explain why the following towns . . . have grown up in the exact positions they occupy," or "Explain why the industries of Spain are in a backward condition." Unfortunately the former type outnumber the latter to such an extent as to militate against the value of the collection. Only thirteen pages, however, of the sixty-four are devoted to questions. The statistical "appendix," therefore, might be described in this case as the tail that wags the dog. And a very good tail it is. The statistics are up to date—chiefly from the "Statesman's Year Book of 1909"—and are arranged regionally under such obvious headings as physical features, climate, products, industries, imports and exports, railways, towns, &c. They will be found very useful indeed for the master who is working his class orally, and who wants his facts and figures in a compressed and easily obtainable form. For example, under "Climate" are given four rainfall figures (one for each quarter of the year) and two temperature figures (the lowest and highest month). Thus under Ireland appears "*Climate:* Valentia (23 ft.), 45·0°, 59·4° (Aug.) F., 11·9, 12·1, 15·0, 17·3 in.; Dublin (51 ft.), 41·9°, 60·4° F., 6·3, 6·6, 7·7, 6·3 in."—on which two lines alone is food for a full hour's most instructive lesson. We commend these "statistics" to the teacher orally inclined.

All atlases—especially school atlases—whether their objective be history or economics or politics, should make much of physical maps. And this most latter-day atlases do now. The "Economic" Atlas (2) is, we are glad to see, no exception to this rule. The mere fact that Prof. Lyde has written the introduction is a guarantee *ad hoc*. Right at the beginning comes a large double-page plate of the world orographically coloured, while climatic maps and physical maps are scattered here and there throughout the book. This is all quite satisfactory. No "commercial geography" worthy the name can teach from any other than a physical base. The introduction takes the form of a short disquisition on each map, or set of maps, wherein the main points of the economic geography are set forth in Prof. Lyde's best crisp and sparkling style. Throughout he insists on the point that all the maps hang together, and that all so-called "product" maps are useless unless used in connection with the physical and climatic maps which precede them. The maps themselves are bright, clear, and up-to-date.

The planisphere (3) is a piece of stout cardboard, 27×24 in., on which a disc, turned by the hand, shows the world revolving in space. It is designed to act as a substitute "where a terrestrial globe is not available" (!). With its aid can be taught earth's rotation and results, time of day and night in various places on the globe, and why the "sun never sets on the British Empire." Certainly—all these can be taught by the planisphere, at a price, but—we prefer a globe. Incidentally the distortion involved by this particular projection of the round earth on a flat disc is almost grotesque in southern latitudes, so much so as to make an ordinary Mollweide appear absolutely orthodox.

We never have anything but praise for Philips' "Comparative Series" of large school maps. The latest addition, the U.S.A. (4), falls no whit behind its predecessors. The scale works out at about 50 miles to the inch; the contours, in the familiar browns, greens, and blues, are from 0–600, 600–1,200, 1,200–3,000, and over 3,000 ft. above sea-level, and from 0–100 and over 100 fathoms below sea-level. The population of towns is indicated by signs, political boundaries are boldly superimposed on the physical features in red (excellent!), railways, canals, and steamer routes are shown. Part of England on the same scale is inserted, and a section across the States (from Cape Hatteras to Cape Mendocino) is drawn at the foot, and is coloured to correspond with the contours of the general map itself. Everything is satisfactory, and the teacher who cannot teach *geography* from this map has himself alone to blame.

The two maps of the Basin of the Thames (5 and 6) deserve similar commendation. They are a capital size (three miles to the inch), the contours are in browns (every 100 ft. up to 400 ft., after which in 200's), and the general effect is most educative. We are not sure which we prefer. Perhaps, for teaching pure and simple, the "unlettered" edition is the more effective—especially for such essentials as the hill-gaps (North Downs, Chilterns, &c.) and their results on man. On the other hand, the "road and railway" edition is more interesting, especially as a point has been made of introducing the old British and Roman roads. We do not remember to have seen a better or clearer exposition, so to say, of "Stone Street," the Roman road which ran through the Arun gap of the South Downs straight to Dorking (where it is called "Pebble Lane") and on over the edge of the North Downs into London by way of Epsom and *Streat*ham. Or, again, as we are touching on details, what could be easier with this map in front of us than to point out how natural it was to build the canal (derelict, alas! now in these railway days) connecting Wey and Arun when once navigation on the former had been improved up to Godalming, as it was just 150 years ago.

It should be noted that both these examples of "details" are to a large extent *outside* the Thames basin proper, which only shows that the purchaser of the map gets more for his money than he expects. *Verb sap.*—All schools who take what is known as the "Surrey Syllabus" for examinations conducted by London University should, at least, have access to these maps of Johnston's.

MORAL INSTRUCTION.

(1) *Laws of Life.* By S. H. Mellone. 157 pp. (Sunday School Association.) 1s. net.

(2) *A Manual of Moral Instruction.* By Jas. Reid. 276 pp. (Nelson.) 2s. 6d. net.

(3) *Moral Instruction in Elementary Schools.* By Harrold Johnson. 46 pp. (Nutt.) 1s. net.

BOTH books (1) and (2) represent morality untinged by emotion, and therefore ill-calculated to influence save, possibly, by way of reaction, the moral growth and conduct of childhood. They represent morality commended on the cold ground of reason, and reason can never teach or interpret the great spiritual reality which is at once in man and beyond him. They represent, therefore, a morality divorced from the living principle of "God with us" and the dynamic that is from above. Both writers discourse equably and genially about self-control and gratitude and health and humility and courage and thrift, about "the great plan" of evolution and conquering nature through obedience to nature's laws. Mr. Mellone touches social questions, and, to use Carlyle's phrase, "carries his dish even" as between Socialism and Individualism, Capital and Labour. There are headings and sub-headings, reminding us forcibly of those sermons of childhood's days which made us bestow inordinate atten-

tion upon the construction of the roof and the number of the gas spouts. Everything is here that pertains to the machinery of morality; everything is neat, clean-cut, ready for the table. But the one great principle which is the "end" of all, in which are focussed all the purposes of life—the vitalising principle is wanting. There is no sense of the reality of the unseen world, no reverence for things sacred and divine, no projection of the vision into the infinitude of that after-life, apart from which all judgments of this life must be nugatory and misleading.

And yet the real teachers of morality, the great masters who have made men so love the Eternal Goodness that they were ready to lay down their life rather than suffer a stain upon their conscience—these great teachers have all put in the forefront the reality of God and the commanding majesty of the Divine law. "Reverence," says Shakespeare, "is the angel of the world." "Let parents bequeath to their children," says Plato, "not riches, but the spirit of reverence." "This is the thing which I know," says John Ruskin, "that in reverence is the chief joy and power of life." It is reverence which these books fail to teach, and, failing in this, fail also in that joy which always goes along with moral health and that power which produces moral action.

True, Mr. Reid tells us that "conscience is the highest authority on conduct," and he defines conscience as "the sense that enables us to perceive the rightness or the wrongness of our actions"; he also tells us that "the feeling of right and wrong is a natural gift within us." But how conscience comes to have this perception of rightness and wrongness, why conscience should have this paramount authority over conduct, what are the ultimate sanctions of right and wrong, he does not say, and he cannot attempt to say so long as he goes on the supposition that this world alone supplies a broad enough basis on which to complete the drama of human life.

On this basis of the world and the assumption that it in itself supplies a sufficient motive for well-doing, we are not surprised to find that morality, under Mr. Reid's interpretation, really resolves itself into a glorified gospel of "getting on." Courtesy, for instance, "helps us to success." "Our life cannot be successful without courage." "Perseverance usually brings success." "The men of highest positions have been diligent workers." "Describe the untiring diligence which brought him" (*i.e.*, Sir Walter Scott) "fame and wealth." "Thoroughness brings success." (One may note in passing that any thoroughness which deserved success would not have derived "ideal" "from the Greek *ideo*—I see.") All of which may be true or may not, but it does not appeal to the higher motive, nor is it calculated to fortify the will when the inevitable hour arrives when the young soul is faced with the choice between the World, seeming self-interest, public opinion on one side, and on the other the will of God, conscience, and duty. There is not much in these books to save a young soul in its fight against the desires of the flesh, against self-will, against the temptations of covetousness and gambling, and all the thousand forms of selfishness. All duty has one source and one sanction in the will of the Eternal.

Mr. Johnson has collected a series of important pronouncements from the Board of Education publications and Prof. Sadler emphasising the importance of moral training and teaching. Then follows a return compiled from official documents to show what is being attempted in the elementary schools of England and Wales in the way of providing for more or less definite instruction. This includes citizenship, thrift, temperance, and hygiene. Almost without exception, the local authorities make no attempt to teach morals divorced from the truths and sanctions of revealed religion. Temperance teaching does not seem to be provided at Burton-on-Trent. But the real factors which count for moral training, the personality of the teacher, the social life and tone of the school, the habits fostered by the common life of the school—these things cannot be scheduled and do not appear. Without them all lessons and circulars and syllabuses are sounding brass and tinkling cymbals.

EDITED AND STORY BOOKS IN ENGLISH.

(1) *The Knights of Charlemagne. King Arthur and his Knights.* 122 pp. each. (Blackie.) 9*d.* each.

(2) *The Story of Sigurd the Volsung.* By William Morris. Edited by Winifred Turner and Helen Scott. 136 pp. (Longmans.) 1*s.* 6*d.*

(3) *A Book of Northern Heroes.* By A. T. Dicks. 163 pp. (Ralph, Holland.) 1*s.* 6*d.*

(4) *Stories from Old French Romance.* By E. M. Wilmot-Buxton. 119 pp. (Methuen.) 1*s.* 6*d.*

(5) *The Story of Hereward.* By D. Stedman. Illustrated by Gertrude Hammond. 280 pp. (Harrap.) 1*s.* 6*d.*

(6) *Tennyson.* The World's Classics. 600 pp. (Frowde.) 1*s.*

(7) *Childe Harold.* Cantos III. and IV. Edited by H. F. Tozer. 336 pp. (Clarendon Press.) 2*s.*

(8) *Coriolanus*, edited by A. J. Collins; *Lear*, edited by S. Goggin. 216 pp.; 196 pp. (Clive.) 2*s.* each.

(9) *Adonais.* Edited by A. R. Weekes. 83 pp. (Clive.) 1*s.* 6*d.*

(10) *The Children's Shakespeare: King Lear* and *The Merchant of Venice.* 71 pp.; 66 pp. (Macmillan.) 4*d.* each.

(11) *Edinburgh Book of Poetry.* Senior, 214 pp., 9*d.* Junior, 142 pp., 6*d.* (Oliver and Boyd.)

(12) *Burke, Reflections on the Revolution in France.* Edited by H. P. Adams. 283 pp. (Clive.) 2*s.* 6*d.*

(13) *Reflections on the French Revolution.* By E. Burke. 274 pp. (Dent.) 1*s.* 6*d.*

(14) *Sheridan's Rivals.* Edited by J. Peile. 48 pp. (Blackie.) 2*d.*

(15) *Oxford Plain Texts: Macaulay's Milton*, 59 pp., 6*d.*; *Lays*, 80 pp., 8*d.*; *Bacon*, 139 pp., 1*s.*; *Warren Hastings*, 128 pp., 8*d.*; *Carlyle's Essay on Burns*, 64 pp., 6*d.* (Clarendon Press.)

(16) *Narratives from Motley's Rise of the Dutch Republic.* Edited by J. Hutchinson. 121 pp. (Macmillan.) 1*s.*

(17) *Parisian Scenes from A Tale of Two Cities.* Edited by J. H. Lobban. 120 pp. (Cambridge University Press.) 1*s.*

(18) *Old Ballads.* Selected by A. T. Quiller-Couch. 63 pp. (Clarendon Press.) 4*d.*

(19) *Seventeenth Century Characters.* Selected by A. T. Quiller-Couch. 48 pp. (Clarendon Press.) 4*d.*

(20) *Goldsmith's Traveller and Gray's Elegy.* Edited by R. M. Barton. 88 pp. (Harrap.) 6*d.*

(21) *Milton's Shorter Poems, Goldsmith, Marmion, The Lay of the Last Minstrel*, and *Macaulay's Lays.* Plain Text Poets. 100 pp. (Blackie.) 6*d.* each.

(22) *The School Selborne.* Arranged by F. H. Shoosmith. 96 pp. (Charles and Dible.) 6*d.*

(23) *Pitman's London Literary Readers.* Book III. 190 pp. (Pitman.) 1*s.* 3*d.*

(24) *Masters of Literature: Emerson.* Edited by G. H. Ferris. 377 pp. (Bell.) 3*s.* 6*d.*

(25) *Study Book in English Literature.* By E. R. Hooker. 315 pp. (Heath.) 3*s.* 6*d.*

"STORIES OLD AND NEW" (1) is the simple but good title for a set of little books attractively bound and pictured. "King Arthur and his Knights" and "The Knights of

Charlemagne" are among the literary volumes. The style is simple, the narratives well chosen. Perhaps the publishers will, later in the series, turn to the East, where story gold-mines are. Each volume has an admirably worded preface of twenty lines. One of a series also is "The Story of Sigurd the Volsung" (2), a shortened version of William Morris's now classical poem. The rolling lines and the mystery which hangs round all Morris's work are very attractive to the reading class in school, and the lust of the flesh, which is never absent from the Latin romances, is less evident in the northern and purely Teutonic sagas. The work is done admirably here; so well, indeed, that the editors fall into Morris's prose as easily as Mr. Wegg into poetry. A good introduction and a glossary of ten pages (alas! poor Morris) are added. "A Book of Northern Heroes" (3) is an *olla podrida* of Norse sagas, Longfellow, the Kalevala, Malory, and Spenser. It would serve (though it is not intended for this) as an admirable comment on the appeal of the Teutonic myth to many geniuses. The children who read it may unconsciously see something of this. "Beowulf" yet cries for a real modernisation. "Stories from Old French Romance" (4) include the immortal "Aucassin" and the less known "William and the Werwolf." This also is one of a series of story books, all well done. The last book of this character is an admirable "Story of Hereward" (5), beautifully printed and illustrated, and told in very straight, good English. It will appeal where Kingsley is too hard. Mr. Stedman has already made Hereward his own.

Coming now to older friends, a very neat little "Tennyson" (6) comes from the World's Classics; Cantos III. and IV. of "Childe Harold" (7) are edited by Mr. Tozer, with a long and scholarly introduction; "Coriolanus" and "Lear" (8) are done as carefully as the rest of their Shakespeare work by the University Tutorial Press, which also sends "Adonais" (9), with a preface which, *inter alia*, insists on Shelley's debt to Bion. A very clever adaptation of "Lear" and the "Merchant" for schools (10) contains a good deal of the dramas eked out by Charles Lamb's prose, and some quite hard questions; and the "Edinburgh Book of Poetry" for seniors and juniors (11) contain well-printed, better known, and less known poems. The books are delightful to handle. We direct attention, for perhaps the fourth or fifth time, to the misprint which five out of six editors countenance in the line:

"Await alike, the inevitable hour."

The misprint here is doubly bad, because of the misleading comma. But they all do it.

The University Tutorial Series sends Burke's "Reflections on the Revolution" (12). Burke surely in the school world has been overshadowed by the more seductive Macaulay: but the "Reflections" never lose their hold. Messrs. Dent (13) send a similar edition. A twopenny copy of Sheridan's "Rivals" (14), curtailed, may lead junior people to act this ever-delightful play; and in the Oxford Plain Texts (15) are Carlyle's "Essay on Burns," Macaulay's "Warren Hastings," the "Lays of Ancient Rome," and the Essays on Milton and Bacon. Has it ever struck a publisher that it would be worth while to reprint half a dozen essays on Burns by celebrated writers and bind them? The same might be done for Milton, Chaucer, and many of the immortals who have inspired great essayists. Narratives from Motley (16), with introduction and critical questions, and "Parisian Scenes from A Tale of Two Cities" (17), close this very much assorted list.

Besides these, "Q." has edited (not for children) "Old Ballads" (18), and several favourites are there with a good introduction; and "Seventeenth Century Characters" (19), with a slight essay on characteristics (La Bruyère and Bunyan being not mentioned). A very much bigger book would be welcome; and when will a publisher reprint, with the plates, the 1824 (?) edition of Theophrastus? Goldsmith's "Deserted Village" (20) and the famous "Elegy" (with the same mistake mentioned above, and carelessly corrected in the notes) are sent by Messrs. Harrap in a beautiful little volume, and our old friends, Milton's "Shorter Poems," Goldsmith's "Poems," "Marmion," "The Lay of the Last Minstrel," and Macaulay's "Lays" (21), are all clearly printed. The Goldsmith volume is a trifle unusual.

A school edition of White's "Selborne" (22) is a good venture: very few people have tried to catch the flavour of the great original of all nature-study books. It is exactly the same with "Eothen": nobody writes a second "Eothen." Pitman's "Literary Readers" (23) are always welcome: whatever they are, they are brought up to last week, and escape the charge which might be brought against many of our school books—that they ought by law to be scrapped. The Masters of Literature series has been noticed before: "Emerson" (24) is a welcome addition. The great mystic (probably he would have scorned the title) is best introduced by a series of selections; his most useful and illuminating jewels are but five words long.

A modest preface (only to be guessed as American by a very few peculiarities of nomenclature) asks us to look at this "Study Book" (25). It is worth looking at. A brief bibliography of the whole subject (Chaucer to Byron) comes first, and then a much briefer bibliography in regard to Chaucer. Then follow tables, questions, and endless suggestions—trite, of course, to older people, but wonderfully new to the young. Direct remarks to the teacher contain much sense. The Miracle Plays (usually brushed aside with half a page) get a chapter, and then we have the usual stars until we come to the Romantic Period. A general survey finishes the book. There are few facts in it, but in response to every question—it bristles with questions—are given references for answers. The student who likes his texts and has this book to work with *in a good library* needs little more. But where are the good libraries for the average students? Possibly in the United States.

THE TEACHING OF LATIN AT THE PERSE SCHOOL, CAMBRIDGE.[1]

THE Board of Education has made its first use of the power which it has under the Regulations for Secondary Schools by giving a special grant to the Perse Grammar School at Cambridge to enable the governors to appoint an additional master, so that the experimental work there being done in the teaching of the classics could be carried out more thoroughly. This is obviously a proper direction for the Board to work in, even if, as it is careful to state, it does not necessarily thereby commit itself to approval of the methods described in the report.

The report itself is by Dr. Rouse, the headmaster, and the assistants who have helped him in the classical work. It consists of three parts, with an appendix. The first part deals with the aims of the new system of teaching languages and with the methods of teaching. The aim is to proceed by reasonable stages, so as to enable the pupil to understand what he hears and reads, to express his own thoughts correctly and fluently, and to appreciate

[1] "The Teaching of Latin at the Perse School, Cambridge." Board of Education, Educational Experiments in Secondary Schools, No. i. 42 pp. (Wyman.) 6*d*.

and to enjoy the literature. Latin is begun at the age of twelve. The pupil learns only English up to ten, and then begins French, and he will not begin Greek or German until fourteen. A boy therefore acquires a good knowledge of English before beginning a foreign language, and is introduced to Latin through the easier language of French. He never begins two languages at once or close together. Further, perfect correctness is aimed at by making the initial stages to consist of a graduated series of problems easy enough for any pupil to solve without exacting too great a mental effort.

All this is important; but the distinguishing feature of Dr. Rouse's innovation lies in his method of basing the teaching of Latin from the beginning on the spoken word. "Nothing," he says, "can be fully learnt until it has been both correctly spoken and correctly written. There is a continued interchange of question and answer which keeps the attention fixed, and makes necessary a constant succession of efforts. . . . The subject-matter of the early stages is taken from the things, acts, and thoughts of daily life, which, being quite familiar, leave the mind free to grapple with the form of expression chosen." "The reading is mostly done and difficulties explained in the language of the lesson." "Translation is (1) used as a test of knowledge, (2) taught as an art." Grammar is regarded as all-important; and the composition is taught in the same way as that in the native language, by practice in simple expressions, the reproduction of a story, or by a free rendering of a passage which has been read.

Part II. is a summary of the work done during the year 1908–9. Form II. (nine boys, average age 12) and Forms III. *a* and *b* (eighteen boys, average age 13½) each had six periods of forty-five minutes, Form IV. (nineteen boys, average age 14½) had eight periods (three for reader, three for composition, and two for grammar or extra reading): this Form read simplified Livy; Form V. (twenty-two boys, average age 14¾) had nine periods, began formal Latin prose, and read Caesar and Ovid's "Metamorphoses." Form VI. (eight to twelve boys, average age 16·11) had twelve periods, and the upper portion fourteen; they all read Virgil, "Aeneid," I.–XII.; Cicero, "Pro Lege Manilia"; Terence, "Andria"; Tacitus, Annals, I. and II.; and the upper set Ovid, "Fasti," I. and II.; Lucretius, I.; and Catullus, Select Poems. For composition the lower set did mainly summaries of books read, and the upper set summaries and formal Latin prose or verse alternately.

Part III. gives detailed and very interesting reports of the work of the different Forms, and the appendix consists of fourteen pages of specimens of actual work done in each form during the year.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

French Verb Exercise Book. By C. F. Shearson. 80 pp. (Dent.) 9*d.* net.—Miss Shearson has compiled for Dent's Modern Language Series a "French Verb Exercise Book" which will be found valuable to teachers, whether they follow the new method or not. The object of the book is to enable the pupil to tabulate the tenses of the French verbs most commonly met with, and then to commit them to memory. A useful feature of the volume is the provision of a column to contain words formed from verbs, and we have no doubt that teachers who use the book on the lines indicated in Miss Shearson's introduction will find that their trouble is amply repaid. We should have preferred to see a smaller size adopted for the volume. It is larger than the ordinary exercise book, and will, we fear, suffer by being carried to and from school.

Pour la Patrie et autres Contes d'Enfants. Par Jetta S. Wolff. 136 pp. (Dent.) 1*s.* 4*d.*—"Pour la Patrie" contains some pleasing tales by Miss Jetta S. Wolff and other writers which may be put into the hands of young pupils at the beginning of their third year. The tales are supplied with annotations in French on the usual reform lines, and seem eminently suitable for class work.

Aus dem Leben. German Scenes for the Class-room. By Ludwig Hirsch and J. Stuart Walters. 67 pp. (Dent.) 1*s.* 4*d.*—Dr. Ludwig Hirsch and Mr. J. Stuart Walters have put together here some capital scenes from everyday life written in colloquial German. The dialogues are spirited and interesting, and in the hands of a fluent teacher the little volume will be found useful for pupils in their second year. We doubt very much whether the time has come to substitute *Gasthof* for *Hotel* and *Speisehaus* for *Restaurant*. A recent edition of Baedeker takes no account of *Speisehäuser*; and if the editors of the volume wished to be consistent, they ought surely to reject *Medizin* (p. 11) in favour of *Arzenei*.

Classics.

Arnold's New Latin Course. By R. M. Allardyce. Part I. viii+118 pp. 1*s.* 6*d.* Part II. viii+216 pp. 2*s.* 6*d.* (Edward Arnold.)—These books, like nearly all lately published, show which way the wind blows. It assumes oral practice, preparation in class, a little learning by direct method (that is, without translation), and reading aloud. Long vowels are marked (unless hidden) in Part I. and half of Part II. Enough grammar is taken at the first to enable master and class to converse if they wish. On the other hand, the subject-matter of the exercises in Part I. has no bearing on boys' life and interests, and has no continuous interest, while the contents of a given exercise are not always coherent. The later exercises are better taken singly or in groups; but it would not have been difficult to run one thread through them all. There is no illusion in such a colloquy as "Esne Graecus? Graecus sum. Estne scriba doctus? Doctus est," not to mention that each of the answers is in the wrong order. English-Latin exercises and vocabularies complete each part. The matter of Part II. is taken from Roman history, with certain anecdotes and stories. Some of these are good: *e.g.*, the dramatic colloquies between Caesar or Cicero and various persons (pp. 72–6), and letters. We ought to learn from the editor the ages of the boys he has in view, and the time he allows for working through the book. Nothing is said of this, however. We think this is certain to prove more useful than the current grammar-cum-exercise plan; but we feel sure that in a year or two Mr. Allardyce will want to rewrite it. *Experientia docet.*

Clari Romani. Julius Caesar. (Simplified text.) Edited by J. H. Dakers. vi+120 pp. *Metellus and Marius, the Jugurthine War.* (Simplified text.) By A. J. Schooling. iv+122 pp. *Agricola.* (Simplified text.) By W. L. Paine. vi+92 pp. (Murray.) 1*s.* 6*d.* each.—These books are an admirable idea. Each condenses and simplifies a Latin text, contains exercises on the text, index of syntax, historical appendix, and vocabulary, but no notes. For the texts we are very grateful. They provide pieces short

enough and easy enough for the early stages of Latin, the third year, say. The exercises are interleaved for the answers, and consist of questions on accidence, and points of syntax to be illustrated from the chapter read; also a few Latin questions to be answered in Latin. The vocabulary we regret, as we hold that at this stage the lesson should be prepared by reading over for the first time in class, and explaining the new words by Latin paraphrase But still, the series is a distinct tep in advance, and we hope soon to be in at the death of the common type of annotated school book.

Proceedings of the Classical Association, 1910. With notes and list of members. VII. 220 pp. (Murray.) *2s. 6d.* net.—Besides the usual proceedings, this contains the final report of the Curricula Committee and an interim report of the Committee on Grammatical Terminology. The former has been sufficiently discussed in public; its merits and its shortcomings are known. It is the first attempt of a representative body to formulate a course of Latin study lasting four years, such as may conduce to a liberal culture. We fully expect it to be improved on in the future, but its principles are sound. Its most remarkable point is perhaps that it assumes twelve to sixteen as the age of the first four years of Latin. Although this is set down as a basis for discussion, not as a result, yet there has been no outcry for an earlier beginning. The grammatical report may also be regarded as a substantial advance on chaos, but it presents some questionable features which will probably disappear later. One such is the French table on p. 138. There is no doubt that the committee is doing useful work, and if any simplification of terms can be made, that will be a lasting benefit. Apparently, what stands most in the way is the practice of elaborate sentence analysis. There are some instructive speeches in the book, notably those on the London Matriculation (p. 84 ff.) and the liberal education of the business man (pp. 103–4).

English.

A Simple Grammar of Modern English. By An Inspector of Schools. viii + 130 pp. (Longmans.) *1s. 4d.*—This book is the outcome of experience among "some ten thousand pupils, the great majority of whom never spoke a word of English before they went to school, and the great majority of whose teachers also speak English only as an acquired language." It is the author's opinion, however, that his book will be equally suitable for those who speak English as their native tongue. Without entering into that question, we may say at once that this grammar is neither more nor less simple, and the English it is concerned with is neither more nor less modern, than a score of other grammars that have passed through our hands in the last twelve months. It is the ordinary skeleton with the ordinary illustrations that publishers apparently never weary of issuing. As a reference book for English children it strikes us as mediocre, as a text-book for non-English children as merely uninteresting.

Words: their Origin and Use. By F. W. Chambers and A. J. Ker. Two books. 87 pp.; *8d.* each. Each with a companion *Teachers' Edition.* 132 pp.; *1s.* net each. (Blackie.)—These books are meant to be taken in the last two years of the elementary-school course, and they are intended to introduce children in the upper standards to numerous words and phrases not met with in the ordinary school readers, to show how intimately the meaning and uses of words are connected with their derivation, to provide by means of exercises—in the Teachers' Editions—a course of English composition closely correlated to the etymological studies, and lastly, by means of illustrative passages—largely taken from English classics—to show how the words are used, and incidentally to provide suitable reading and dictation exercises. The sub-title of the book is "a correlated scheme of spelling, derivation, reading, dictation, and composition." Of the excellence of the authors' intentions and of the conscientious thoroughness of their work there is no question, but we doubt whether the time devoted to this elaborate scheme of language-study could not be better employed in a training in appreciation of simple, good literature suitable to the children's age. No doubt it may be necessary for them to understand that "his continual catarrh resulted at last in hæmorrhage," and that, "having a sound knowledge of trigonometrical relations, he was able to realise the value of his telescopic observations"; but, seriously, have we not here a pathetic instance of what we schoolmasters are so apt to do—to run to death an idea for which, in proper subordination, much may be said? Vocabulary lies, of course, at the base of all ideas; but ideas are not to be apprehended merely by a pedantic study of vocabulary. Is it altogether fancy that the authors' nationality—the same, by the way, as that of the present reviewer—may have led them to put an exaggerated value upon this side of English teaching? At any rate, vocabulary plays a very large part in scholarship tests in Scotland—and in England when conducted by Scotsmen; and the authors of these books express the hope that they may prove useful in training for scholarships and similar examinations. But Scotland has better things to teach England than a pedantic study of vocabulary.

History.

A History of England. By James Oliphant. xvi + 456 pp. (Dent.) *3s. 6d.*—This history text-book is written on a novel plan. It is not divided into the familiar reigns or periods; it is almost devoid of both genealogical tables and maps; it contains very few dates, and it does not follow a strictly chronological order. It consists, in fact, of 115 little monographs or essays on prominent topics of English history, the average length of each being about three and a half pages. They deal not only with the political aspects of our country's development, but also with social, economic, and intellectual features. The author in his prefatory explanation of his departure from old-established methods says that "the present volume is put forward to meet the opportunity created by the issue from the Board of Education of Circular 599 and the explanatory Memorandum on the Teaching of History in Secondary Schools," and he regards this essay method of presentation as "a more liberal treatment of the subject" than that which it supersedes. There is no doubt that Mr. Oliphant has succeeded in producing an interesting book, the value of which is greatly enhanced by its 217 excellent illustrations—including as they do a collection of 100 historical portraits. We think, however, that the book will be of use mainly to the teacher in search of topics, and the general reader who already knows his outlines, rather than to the young scholar for whom it is intended. Its style, its arrangement, the looseness of its structure, its lack of the severer elements, unfit it to serve even as "a background for the real work of the class." The background must be made of more rocky material; this will provide an amiable foreground.

Longmans' Historical Illustrations of England in the Middle Ages. Drawn and described by T. C. Barfield. Portfolios V. and VI. (Longmans.) *2s. 6d.* each net.—These two portfolios, each containing twelve prints about 10 in. by 7 in. in size, exhibit the same useful character-

istics as their four predecessors. They deal in minute and accurate detail with the architecture and the costumes of the fourteenth and fifteenth centuries. They have this advantage over the ordinary historical picture, that they are invariably based upon authentic sources of information. They are not intended to portray the moving events of our national history, but rather the static conditions under which the events were transacted. For the study of such subjects as the development of architecture or the changes in defensive armour they are of peculiar value.

Great Britain and Ireland. By J. E. Morris. viii + 480 pp. (Cambridge University Press.) 3*s*.—Dr. Morris writes under the influence of the works of Round, Ramsay, Seeley, Mahan, and Green. He is also fond of Scott, and recommends his "Quentin Durward" for the study of Louis XI. of France; but he can criticise the Scottish novelist on other occasions, as well as "Westward Ho!" His *bêtes noires* are apparently Macaulay and Thackeray, whom he criticises severely for their treatment of Marlborough and Anne's period generally. He devotes ten pages to an account of Domesday (almost as much as he gives to the early British and Roman period). The result is a good history of England (the titles to the pages contradict the title-page) and such parts of Scottish and Irish history as are intimately connected therewith. But if the book reaches a second edition, it should be revised carefully. All through there are a number of small deviations from what is now regarded as strictly accurate, and there are also some small omissions which should be made good. But it is well written and interesting, and contains many good illustrations and useful genealogical tables, but no index.

The Intermediate History of England. Part I. To A.D. 1603. By W. J. Perry. xli + 250 pp. (Relfe.) 2*s*.—After forty-one pages containing tables, chronological and dynastic, and an index curiously sandwiched between them, the author gives in chapters and short paragraphs with inset headings a summary of early British and English history until the end of the Tudor period. The events of ordinary history are given first for each period (generally a single reign), and then those of constitutional and ecclesiastical history. We do not admire the method, as it leads merely to preparation for routine questions in examination, but in its own kind the book is well done, and is, generally speaking, up-to-date in its information.

A History of the British Dominions beyond the Seas. Edited by A. H. Forbes. 239 pp. (Ralph, Holland.) 2*s*. 6*d*. net.—The preface states that "this volume embodies, with some slight emendations, Clough's 'Expansion of the British Empire (1558–1858),' and continues the same down to 1910." Each chapter consists, therefore, of two sections, one of "Clough's" authorship, written, apparently, fifty years ago, and one of the editor's, adding events, not to this year, but, so far as we have found, to 1905. There are three appendices, one biographical, one on "epochs of expansion" (the last dated 1884), and one a glossary of colonial terms. There is also an index.

Government and Citizenship. By D. Davidson. vii + 175 pp. (Oliver and Boyd.) 1*s*.—This book is intended as a text-book for supplementary and continuation classes in Scotland. Some chapters contain an account of central and local government in England and Scotland, and of the Parliament and judiciary. Others give something of the history. While most of the contents are good and useful, the plan of the book seems somewhat disjointed. Otherwise it may be recommended.

Mathematics.

The Calculus for Beginners. By J. W. Mercer. xiv + 433 pp. (Cambridge University Press.) 6*s*.—The author of this excellent work states that it is intended primarily for those who are interested in the applications of the calculus to physics and engineering. He has therefore endeavoured to lead the student to a thorough comprehension of the character of the processes involved, dexterity in differentiating and integrating being regarded as of secondary importance. No apology is needed for the long preliminary chapter on fundamental notions. Beginners have to be allowed plenty of time to assimilate the notions of rates of change, limit and functionality. In the first eight chapters x^n is the only function considered; the trigonometric, exponential, and logarithmic are introduced in the three following, and the last three chapters deal respectively with the solution of equations, harder integrations, and polar co-ordinates. The faith of the student in the validity of limiting operations is confirmed by the numerous examples—forming, indeed, one of the characteristic features of the book—in which the gradual closing in to a limit of the ratios of finite differences and of summations is carefully examined. The examples are numerous, and many applications to geometrical, physical, and mechanical problems are included.

A Manual of Geometry. By W. D. Eggar. Part I. xiii + 160 pp. Part II. x + 168 pp. (Macmillan.) 2*s*. each part.—This work (now issued in two parts) is based upon the author's "Practical Exercises in Geometry," but the subject-matter is arranged in accordance with the Cambridge schedule, and theorems are introduced along with the practical work. Part I. contains the elementary theory of triangles and areas, and Part II. that of circles and similar figures. The theorems are approached inductively; a formal proof is then indicated, which the learner is expected to write out in a complete form. The book is one of the best representatives of recent tendencies in the teaching of elementary geometry, and criticism of the book would be largely criticism of methods at present under trial. In view of the conflicting evidence at present available regarding the results obtained by modern methods, it would be of interest to know what degree of success has been achieved by pursuing a course such as that in the book under review.

The Elements of Hydrostatics. By C. M. Jessop and G. W. Caunt. iv + 126 pp. (Bell.) 2*s*. 6*d*.—This book contains those parts of hydrostatics which can be treated without the use of the calculus. The subject is explained in an admirably clear and concise manner, and there is an adequate store of examples, both worked and to exercise students. It seems in all respects a very satisfactory text-book.

Science and Technology.

Catalogue of Physical Apparatus: Heat. 54 pp. (Gallenkamp.)—Messrs. Gallenkamp are favourably known to teachers of science as laboratory and assay outfitters. Their lists always contain particulars of many interesting instruments and devices, and the present catalogue is no exception to this rule. In addition to the usual instruments, the catalogue gives particulars and prices of new apparatus described in THE SCHOOL WORLD and other periodicals, and in various works on heat. Even the most original teacher has to make use of instrument-makers' apparatus to some extent, for there are pieces of apparatus

which must be purchased if convincing and accurate experimental results are desired in the lecture-room and the advanced physics laboratory. With Messrs. Gallenkamp's catalogue before them, the selection of good instruments at a moderate cost, for work in heat, is facilitated.

Light Visible and Invisible. By S. P. Thompson, F.R.S. Second edition. xiii+382 pp. (Macmillan.) 6*s.* net.—The new edition of Prof. Thompson's popular book has been enlarged. To the Royal Institution lectures contained in the original issue have been added the lecture delivered to working men at the York meeting of the British Association in 1906 and a lecture on radium. The book deserves to continue to be read widely.

Miscellaneous.

Old Testament History. By the Rev. J. M. Hardwick and the Rev. H. Costley White. Period I. Genesis, Exodus I.–XV. 206 pp. (Murray.) 2*s.*—The authors allow the Bible to tell its story in its own words. They divide it into convenient sections for lesson purposes, supplying short introductions to each section and brief occasional notes, when needed, at the bottom of the page. The authors take account of modern critical science so far as it is constructive, and in the appendix give the teacher in a handy form the references for further study of Mesopotamian and Egyptian history and traditions. The references to the well-known "Helps to the Study of the Bible" will also be useful to the teacher who is looking for illustrative material.

Heroes of the Hebrew Monarchy. By Mrs. F. S. Boas. 128 pp. (Horace Marshall.) 1*s.* 4*d.*—Mrs. Boas goes upon the opposite principle to Mr. Hardwick and the new headmaster of Bradfield. She tells the story in her own words. In other hands it might have been successful; but Mrs. Boas has not the gift of story-telling. The sentences are long and complicated. Take, for instance, the sentence on p. 38, which drags its weary length over no less than half a page, and contains the following labyrinth: ". . . and, disinherited without fault on his own part though he was, there is no word of envy, jealousy, or anger ever recorded of him against David, his supplanter, to whom his soul was knit in a love that passed the love of women or against his father, who had spoilt his life, but whom he never forsook, and from whom even in death he was not divided." And this sentence is intruded into the middle of the story of Jonathan's most gallant exploit! A story for children should be direct and actual. It need not go out of its way to veil an act of butchery. "Samuel hewed Agag in pieces before the Lord." That a child can understand at once; but what will it make of "with his own hand he carried out to the terrible end the command of God which Saul had disregarded"? Instead of the fine story of the Witch of Endor, all we have from Mrs. Boas is the following allusive and elusive paragraph: "We cannot tell what is the true meaning of the solemn scene near the end of Saul's life, when, worn with madness, grief, and disappointment, he bade the wise woman, the Witch of Endor, call up before him the figure of the dead prophet Samuel." The pictures are well chosen and well reproduced.

Corinthians, I., II. Edited by the Rev. S. C. Carpenter. 115 pp. *Galatians and Romans.* Edited by the Rev. H. W. Tulford. 182 pp. *Ephesians, Philippians, Colossians and Philemon.* Edited by the Rev. W. K. Lowther Clarke. 98 pp. (Cambridge University Press.) 1*s.* 6*d.* net each.—These editions, which have the benefit of the Revised Version, are worthy successors to the books which have preceded them in the series. The notes are concise—everything that is unnecessary is pruned away; the maps are clear; disputed questions have the arguments on both sides fairly set out.

Girton my Friend. By Brenda E. List. 92 pp. (Heffer.) 2*s.* 6*d.*—

"Hurry and clatter and bustle and din,
And the noise of our food as we shovel it in,
And the tread of the Gyp as she clumsily waits,
And the crash of another who's smashing the plates,
And the shout of a student who calls to a friend
Who may be sitting at quite the far end."

If this is to be taken as a true and faithful description of the "hall" dinner at Girton, then Girton is a friend whom most parents would wish their daughters to avoid. Most English homes, even in these advanced days, would prefer the ladies of the household not to sit with their feet on the mantelshelf (p. 37), not to stretch for everything at table (p. 16), not to go in for "flat contradiction as blunt as one's knife" (p. 36), and to absorb their victuals inaudibly, not "feeding like horses when you hear them feed," as Tennyson prefers to phrase it.

The book consists of a description of a holiday reading party in prose and many verses of occasion mostly connected with college life and college friends. Among the seventy or more pages of verse there is but one touch of poetry; only once does the feeling become tense and the expression simple, direct, and earnest. Of the rest, one might say with Swinburne "Poeta nascitur non fit for publication." The book may have value for the immediate circle of the writer's friends, who find a pleasure in identifying the "Angelina" who read history spasmodically in the train amid the fall of dressing-cases, and the "Mighty One" who drank hot water out of a saucer. For others the book may have, if not a value, at any rate a use, by supplying instances of what composition pupils should avoid—*e.g.*, epithets which have no reason for existence except the scarcity of rhymes in this provoking world:

"Every day of every term
Peals that bell with echo firm";

sheer prose masquerading as poetry:

"Up in Top Hospital she used to live,
Her room the second on the left, I think";

and failing to say what one means to say, and so adding to the number of things one would wish after utterance to have expressed otherwise—*e.g.*:

"My days are filled with thoughts of you,
But they pass with leaden wings."

CORRESPONDENCE.

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

The Use of Sources in School History.

AT a time when a certain amount of discussion is going on as to the value of "the so-called Source Method" of teaching history, the following account of some experiments made with the object of testing and supplementing some of the results recorded by Mrs. Mary Sheldon Barnes in her "Studies in Historical Method" (Boston, U.S.A.: Heath) may prove interesting.

The experiments were made with two history Sets in the upper part of an ordinary first-grade secondary school

of recent foundation. Set I. consisted of twenty-seven boys doing the first year's work in a three years' course of English history in preparation for the Northern Universities' Matriculation examination. Set II. was made up of forty-six boys occupied in a brief survey of European history. Both Sets, but more especially Set I., had at intervals throughout the year taken part in class-room studies of extracts from contemporary documents, followed by home-work exercises based upon them. In both Sets there was a decided "tail," but on the whole the results of the "source" work had been encouraging.

At the end of the year Set I. (average age, fifteen to sixteen) was given the following test:

"*Read through the following passages, and then say which you would rather keep if you could only keep one of them, and give your reasons.*

"*A.* William I. to Pope Gregory VII. (1079).

"To Gregory, the Most Excellent Shepherd of the Holy Church, William by the grace of God, King of the English and Duke of the Normans: Greeting and friendship:

"Your legate Hubert, most holy father, coming to me on your behalf, has admonished me to profess allegiance to you and your successors, and to think better regarding the money which my ancestors were used to send to the Church of Rome. I have consented to one, but not to the other. I would not consent to the allegiance, nor will I now, because I never promised it, nor do I find that my ancestors ever promised it to your predecessors. The money has been negligently collected during the last three years, when I was in France; but now that I have returned, by God's mercy, into my kingdom, I send you, by the legate aforesaid what has already been collected; and the rest shall be forwarded by the messengers of our trusty archbishop, Lanfranc, when an opportunity of doing so shall offer ("Kings' Letters," de la More Press).

"*B.* To Gregory VII.'s demand for his fealty William I. returned a respectful but firm refusal. The sovereignty of England was not to be diminished; he would hold the kingdom as freely as his predecessors had done. Peter's Pence, which it belonged of right to England to pay, should be regularly collected and sent to Rome, but no right of rule, even theoretical, over king or kingdom, could be allowed the pope."[1]

The boys had not previously seen either extract. I tabulate below the results of an analysis of the answers returned:

A. Chosen by 16. Reasons:

(1) Fuller	11
(2) More interesting	4
Because it gives mediæval atmosphere and epistolary style	3
(3) Original document	5
Because:	
(*a*) More trustworthy	4
(*b*) Probably basis of *B.*	3
(4) Easier to understand	2
(5) Tone gives idea of—	
(*a*) Importance of Pope	2
(*b*) William's skill as diplomatist	1
(6) More explanatory	1

B. Chosen by 11. Reasons:

(1) More pointed, exact, definite	9
(2) More condensed	11
(3) Easier to understand	9
(4) Easier to remember	2
(5) Brings out meaning of *A*	1

To Set II. (age twelve to fifteen) the test given was similar in character, except that they had previously studied the "source" extract (Columbus's letter to Gabriel Sanchez: Old South Leaflets Translation), while the extract *B.* was taken from their own text-book ("Men and Movements in European History," Arnold, pp. 156, l. 20–158, l. 15). The analysed results are given below:

A. Chosen by 43. Reasons:

(1) Columbus wrote it himself (but 4 more by implication)	(actually) 29
Because:	
(*a*) More interesting	3
(*b*) More trustworthy	23
Because:	
(i) Original account less likely to contain exaggeration or any deviation from truth	6
(ii) Columbus was such an exact and careful observer and recorder	3
(2) More interesting, because:	
(*a*) More graphic or vivid	2
(*b*) More detailed	22
(*c*) Fuller description of islands (climate, vegetation, people, &c.)	11
(3) Gives insight into nature of Columbus's:	
(*a*) Character	7
E.g., religious feeling	5
(*b*) Motives	4
(*c*) Ideas	1
(*d*) Task	1
(4) Probably "source" of *B.*	2
(5) Clearer, "better," easier to understand	8
(6) Information more essential or useful	4
(7) "Seems" more true	2
(8) Supported by evidence of later explorer, viz., Amerigo Vespucci	1
(9) Illustrates contemporary religious feeling	1
(10) Suggests higher motive than simply to find a new trade route	1

B. Chosen by 3. Reasons:

(1) Corrects Columbus's erroneous geographical ideas	1
(2) Omits possible exaggerations	1
(3) Less detailed	1
(4) More dates	1
(5) Says more about the first sighting of the islands	1

What light do these results throw upon Mrs. Sheldon Barnes's conclusion that children have "a strong interest in original sources, developing into a conscious sense of evidence about the age of thirteen"?

On one hand, only a few of the abler, more original, and more historically minded boys in Set I. fully appreciated the Conqueror's letter to Gregory VII. A number showed a preference for the concise modern summary, with its ready-made deductions; found *A.* harder to understand; betrayed a lack of interest in the topic; and entirely missed the obvious facts that:

(1) *B.* was derived from *A.*

(2) The unknown authorship of *B.* made it untrustworthy except in so far as it was corroborated by *A.*

On the other hand, quite a large number of Set II. showed a very adequate appreciation of the value of Columbus's letter as a piece of first-hand evidence. A number also showed a sense of the value of *A.* as supplying materials for a study of Columbus's character and motives.

Three boys found an additional reason for Columbus's credibility in their knowledge of his character derived from the evidence of his son Ferdinand's narrative, which had formed part of their collateral reading. Another

[1] From "Political History of England" Longmans), vol. ii., p. 49.

found, in his private reading of Amerigo Vespucci's accounts of his voyages to the New World, a corroboration of the statements in the letter, and a further reason for believing Columbus. Yet another made his acceptance of the letter conditional on certainty of its authorship: "If Columbus really wrote this letter, it is more likely to be true."

Practically the whole Set were keenly interested in the topic, wanted more details, and were anxious to read any further available contemporary accounts in their leisure time.

A few in each Set showed a consciousness of what Mr. Keatinge has called "the atmospheric value" of original sources, and a few also showed a sense of reverence for the original document as a "relic."

How are we to explain the striking contrast between the results of the tests given to the two Sets?

The obvious points of difference in their circumstances are these:

(*a*) Set I. was, on an average, at least two years older than Set II. This I know, from my personal knowledge of their previous history, means that, at best, they have spent two extra years in the study of history from the ordinary type of examination text-book, helped out by the oral exposition of a non-specialist teacher, and, at worst, that they have had two extra years of the "learn the next ten pages" type of history teaching.

(*b*) Set I. took the test "unseen," while Set II. had previously studied the extract, though not at all from the point of view of the test.

(*c*) Set I. were tested on a topic in which their interest had not previously been aroused, and which was not inherently interesting to them, at any rate at first sight, while Set II. were already keenly interested in the topic, and, indeed, had evinced great spontaneous interest in it from their very first introduction to it.

This comparison seems to suggest that the following conclusions may be tentatively put forward as a result of our investigation:

(i) That the "strong interest in original sources, developing into a conscious sense of evidence about the age of thirteen," becomes blunted by the exclusive use of ordinary text-books and the pressure of preparation for examinations, both of which tend to replace it by a desire for easily memorised summaries with ready-made generalisations.

(ii) That a boy's interest in the credibility of an account is proportionate to his interest in its topic.

(iii) That, while the amount of guidance required from the teacher varies in proportion to the "suitability"—*i.e.*, the inherent interest, &c.—of the source extract, the best results will usually follow the study of the extract in class under the guiding questions of the teacher.

(iv) That it is desirable that, as soon as "the strong interest in 'suitable' original sources" appears, opportunities should be given for enabling it to develop "into a conscious sense of evidence," and that this sense of evidence should not be allowed to die of inanition owing to the exclusive use of even the best of the ordinary text-books.

(v) That the moderate, rational use of "suitable" source extracts as the basis of school work upon some of the specially important and interesting topics in history is desirable as being one of the simplest means of securing that formal training in "social science," by giving which history can best justify its position in the curriculum of our schools.

F. G. SNOWBALL.

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An Omitted Item in the Training of Specialist Teachers.

MAY I make a few remarks in your correspondence columns that refer mainly to schoolmasters who are teaching one "special" subject, such as classics or mathematics, and contain a suggestion which seems practical, though not employed in any of the training colleges for secondary-school teachers with which I am acquainted? Let us consider the facts of the case. Many schools nowadays are insisting that the masters of "special" subjects whom they appoint shall have undergone, in addition to their university course, a distinct training in the theory and practice of teaching the particular subject which they profess. What actually happens, in general, is that the student leaves his university with an honours degree, attends a training college, and there goes through a course of actual teaching, together with lectures on the mental development of children and youths. Now if such a person happens to be appointed on the staff of a large and well-equipped school, the chances are that he will be coming in contact daily with other teachers of the same subject, who will in many cases be men of good calibre and well versed in the best methods of the day. He will thus be saved, perforce, from mental stagnation, and the methods which he teaches will be kept up-to-date.

If, on the other hand, he be appointed in some out-of-the-way school, he may be the only man on the staff teaching that particular subject, or, at all events, he is not likely to be constantly meeting colleagues in the van of progress. Where there is no progression there is regression, and the only hope for the specialist so situated is to read hard the best pedagogic periodicals of the day dealing with his particular subject. Now the average honours graduate newly from the training college does not know even the names of these pedagogic periodicals. As they are so necessary to his mental equipment, would it not be advisable if the training college explicitly informed the student what the names of the best educational journals dealing with his subject are, and, furthermore, how to use them? One such magazine, at least, could be prescribed, and its contents systematically discussed until the habit of reading them regularly becomes ingrained. These journals contain the fruits of the experience and reflection of the best teachers of the day, and the young master will thus at the outset of his career as a teacher acquire the faculty of keeping abreast of the latest developments of his subject considered as a branch of pedagogy. The perusal of educational periodicals bears the same relation to the active teacher as the consultation of original memoirs does to the active researcher.

Clifton College. WILLIAM P. MILNE.

French Holidays for English Boys.

THE advantages of exchanging our scholars with those of another country have been detailed too frequently and too convincingly to need repeating here, but a short account of the exchange of two Manchester schoolboys with two French boys from a rural school in the department of the Charente-Inférieure may prove interesting to those who contemplate similar experiments.

The exchange was a second thought, and developed from the interchange of correspondence between the scholars of the two schools. Several months before the trip the scholars in an upper class of the English school sent a joint letter to the French school asking for correspondents. In reply came a batch of letters, one for each name sent, with a note from the teacher indicating the age, attainments, and disposition of the writers. These letters were

allotted to those who had asked for them, the distribution being guided by the particulars supplied by the French teacher. Thus the correspondence became an established fact, and went on during the remainder of the school year. The English boys wrote their letters in French, and returned their friend's letter with it, corrected. In the next batch came back their own letter corrected, and a further letter in English to be corrected. It was interesting to see how different cases developed. Sometimes a close friendship grew up and persisted, while in other cases there was nothing further than an exchange of polite nothings. The topics most frequently dealt with centred round the school and home life of the boys, and much interesting information was thus gained on French life and sentiment. Postcards were exchanged from time to time, and exhibited in the class-room, and newspapers were sent when their contents were thought to be of special interest on the "other side."

It was from the interest thus aroused that a request was made by some of the scholars for a "real" trip to France in the summer holidays. In the first excitement of such a possibility nearly every member of the class expressed a desire to go, and pledged their parents' consent to the undertaking; but this, as was found later, was only the way of youth. However, to provide for such a possibility, the actual class instruction in French was altered, and pictures of a railway station, train, boat, customs office, street, and house were made the basis of conversation. The scholars were very keen on this work, and already pictured themselves landing at a French port and engaging all the natives in conversation!

As the time drew near difficulties began to appear. It was found that no teacher could accompany the boys if they decided to go. This was a blow that reduced the possible number of travellers almost to the verge of extinction. However, after much arrangement and rearrangement, two boys survived all difficulties and the exchange was settled. To avoid the dangers of crossing London and Paris, the boys travelled from Liverpool to La Rochelle by the Pacific Steam Navigation Company's service, and were met at La Rochelle by their hosts. (The steamship company showed great kindness throughout, both in looking after the boys and in allowing a reduction of fare.)

The whole trip was most successful. Besides a very considerable improvement in their knowledge of French, the boys have gained experiences of great general value. They have made very warm friends in what was formerly a "foreign" country. They have seen a large part of rural France, with its typical agricultural life. They have visited many towns which have a vital connection with English history, including La Rochelle and Bordeaux. Last, but by no means the least important, from the mere fact that they were alone in their respective villages, these boys have perhaps learnt to see their native land in a new light, and will be the better citizens for it.

F. SMITH.

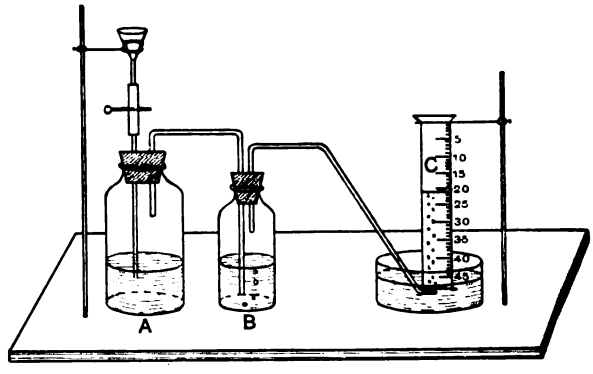
Preparation of Nitrogen.

IF air be bubbled through an alkaline pyrogallol solution at a definite rate (for reasons to be given hereafter), absorption of oxygen effectively takes place, the unabsorbed nitrogen being in the usual way collected by the water displacement method.

A quantitative demonstration, too, is possible this way. Our high-school boys obtain very fair results as to the percentage composition of nitrogen and oxygen in air by using a graduated cylinder C to collect the nitrogen.

I suggest this method as safer in the hands of boys than passing air over phosphorus. Three to five grams of pyrogallic acid is easily obtainable of a local photographer, even assuming that the high school keeps no stock of it. This quantity of the acid dissolved in 100 c.c. of a 40 per cent. solution of KOH (which works better than NaOH) will be quite enough to collect at least 400 c.c. of nitrogen. Three to four bubbles of air a second can be passed or bubbled through the solution contained in B (fig.), but as the latter gets weak only two bubbles a second should be passed.

The arrangement in the figure—with a pinch-cock to an ordinary funnel—is only an apology for a separating funnel, which I am afraid is not available everywhere. Water from the funnel is allowed to dribble or run into the empty bottle A, and the displaced air bubbles through the solution in B. Care must be taken not to allow outside air to get sucked into A or B through the funnel;



this can be ensured by taking care to have *some water* always in the funnel.

Measure the water which has thus run into A; this gives in c.c. the volume of air which has bubbled through B; next read the volume of nitrogen in C, and calculate the percentage. A little more accuracy could be ensured by reading the nitrogen in the cylinder at atmospheric pressure.

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The School World.

A Monthly Magazine of Educational Work and Progress.

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SUPERANNUATION OF TEACHERS.

By FRED CHARLES, B.A.
Strand School, London.

SINCE 1907, when three articles on pensions for teachers were submitted to readers of THE SCHOOL WORLD, much has been said on the subject. In spite, however, of what has been said and of the amount of attention bestowed, inquiries show that a very small proportion of secondary-school teachers in this country can look forward even to inadequate provision for old age. A report prepared by the Incorporated Association of Assistant Masters in Secondary Schools, and issued in January of this year, says: "So far as can be ascertained, in only twenty-four schools (secondary schools for boys), employing 465 masters, have pension schemes been started; and in no case does the State make a direct contribution (except for the Naval School at Osborne)."

To a more recent inquiry sent to all the local education authorities in England and Wales (except the largest county boroughs), London alone among English counties, two Welsh counties, and two non-county boroughs replied that pension schemes were in force in the secondary schools under their control.

In Scotland the position is more satisfactory. The Education (Scotland) Act, 1908, thanks to the unanimity of teachers and governors, and to enlightened public opinion, provides for the establishment of a superannuation scheme for teachers. The Department—the Scotch Education Department—may deduct from the grants payable to school boards, governing bodies, and other managers of schools in receipt of grants, a sum not exceeding 6 per cent. of the salaries for the year. The school boards, governing bodies, and other managers may in their turn deduct from the salary of every teacher to whom the scheme applies a sum not exceeding 4 per cent. of his salary.

The teacher, provided he has served ten years, is to receive from the Department on retirement an allowance the amount of which is to depend on length of service and average salary, either throughout service or during a certain number of years before retirement.

Retirement is to take place on reaching a certain age, which may be different for men and women, or in case of permanent disablement.

If a teacher withdraws without claim to a retiring allowance, or dies while in the service, his contributions are to be returned to him or to his personal representatives; and further, if a teacher dies while in receipt of a retiring allowance, the excess of his contributions over the sum of the allowances received is to be paid to his personal representative.

When the scheme takes effect the Elementary Teachers (Superannuation) Act, 1898, is to cease to apply to Scotland, and the Treasury is to contribute to the Education (Scotland) Fund, from which fund such contributions as the scheme determines are to be made to the Scottish Teachers' Superannuation Fund.

The teachers in the secondary schools of England and Wales fare far worse in this matter than those in any other schools in the kingdom. The Elementary School Teachers (Superannuation) Act, 1898, provides, though inadequately, for elementary-school teachers; Treasury grants supply funds to the university colleges for the purpose of pensioning university teachers, and the grants must be returned to the Treasury with interest unless so applied. But the only recognition teachers in secondary school have yet received is the insertion in a few schemes of a permissive clause allowing the governors to contribute out of school funds a sum not exceeding one-half of the premium on an insurance policy. Thus governors who are able and willing to make suitable provision for the old age of the teachers in their schools have been prevented from doing so by the action of the Board.

The Elementary School Teachers (Superannuation) Act, 1898, was outlined in THE SCHOOL WORLD, July, 1907. It undoubtedly leaves much to be desired. Men teachers originally contributed £3 a year, women teachers £2 a year; two increments have taken place in these contributions under a clause which provides that, if at any time the salaries of certificated teachers exceed by 10 per cent. £119 13*s.* 3*d.* in the case of men, or £76 11*s.* 9*d.* in the case of women, the contribution shall be increased by a sum not exceeding 5*s.* for each 10 per cent. of the excess. Men now contribute £3 10*s.* and women £2 8*s.*, and the annuities are correspondingly increased.

Commencing to contribute at the age of twenty-three,

On retirement at	45	55	65 years of age
	£ s. d.	£ s. d.	£ s. d.
A man would receive	32 0 0	42 0 0	61 5 8
A woman would receive	23 0 0	29 13 4	41 19 4

as the total of the Annuity and Superannuation Allowance.

Now these pensions (!) compare very unfavourably with those provided for the officers of the L.C.C., so that ever since that body became the local education authority for the district there has been a desire on the part of the teachers affected to come under the pensions arrangement for the officers of the Council. This, however, would have been to transfer the incidence of the cost of pensioning London elementary-school teachers from national to local funds, and this the Council refused to do.

It has now framed two parallel schemes, to come into operation on April 1st, 1911: one for certificated teachers eligible to contribute to the Deferred Annuity Fund, who are in the service of the Council or of the managers of non-provided schools in the County of London, a second for other teachers in the service of the Council.

In the former case the scheme is complementary to the Government scheme, and benefits and contributions are to be calculated on the amount by which the salary exceeds £96 in the case of a man, or £72 in the case of a woman. In the latter, benefits and contributions are calculated on the full-time salary.

The amounts to be contributed vary in the two schemes according to the age at the date of the first contribution. Under the complementary scheme men contribute from 4¾ to 10½ per cent., and women from 5 to 12¼ per cent. of the excess of salary over £96 and £72. In the full-time scheme the corresponding contributions are from 3¾ to 10½ per cent., and from 4¼ to 12 per cent. of the full-time salary.

In the event of retirement through permanent incapacity or on attaining the age of sixty-five each teacher who has contributed for ten years is to receive a yearly superannuation allowance at the rate of one-sixtieth of the average annual amount on which he has contributed to the fund for each year of contribution up to a maximum of forty-sixtieths.

In the event of death while in the service, of retirement through ill-health without having contributed for ten years, or of marriage in the case of a woman, the contributions with interest at 3 per cent. will be paid; in the event of withdrawal from any other cause than fraud, dishonesty, or misconduct involving pecuniary loss to the Council the contributions without interest will be returned.

In the event of death after retirement or discontinuance of a superannuation allowance, the difference between the amount of his contributions, with interest at 3 per cent. to the date of retirement, and the total of allowances already paid, will be returned to the contributor or his legal representatives. The Council is to contribute 3 per cent. of the total amount on which contributions have been made, is to guarantee interest at 3½ per cent. on the money accumulated, and to guarantee also the solvency of the fund.

The main difference between the scheme just adopted and the amended scheme for the officers of the Council (to which the teachers in the Council's secondary schools contribute) are the separate scales of payment for men and women, the provision for joining the scheme up to the age of fifty-five, and the higher rates of contribution.

The scales for men and women are separate, because the rates of withdrawal, mortality, and superannuation are different for the two sexes, the women living longer than the men, and because any alteration in the proportion of men and women joining the fund, or in the conditions of service of either, would necessitate a change in the scheme.

An analysis of the Board of Education statistics relating to superannuation and disablement allowances under the Elementary School Teachers (Superannuation) Act showed that during the eight years to which they referred, the mortality of teachers was exceptionally light, and the values of annuities on the lives of both men and women teachers pensioned at sixty-five are about 10 per cent. greater than those shown by any standard mortality tables at the same age.

The rates for entrants over forty years of age was, in the old scheme, 5 per cent.; in the new full-time scheme:

	Men Per cent.	Women Per cent.
40 and under 45	8¼	10¼
45 ,, 50	9½	11¾
50 ,, 55	10½	12

The reason put forward for this large difference is that when the existing scheme was framed it was considered that the number of entrants at the higher age would be small, but this consideration does not apply in the case of existing teachers, some of whom come under the Council after twenty, thirty, or more years' service, in consequence of the transfer of secondary schools and technical institutes.

Those teachers already contributing to the existing scheme will not be transferred, but secondary-school teachers appointed after April, 1911, or in schools transferred to the Council after that date, will apparently be required to contribute to the full-time scheme.

Such, then, are the provisions made by the L.C.C. From the point of view of the master they are undoubtedly excellent for the man who breaks down, or lives after sixty-five to enjoy the fruits of his labours; but for the man who wishes to retire before that age, or for the representative of the man who dies in harness, the terms are not nearly so favourable. In fact, one class apparently reaps the advantage of the misfortune of the other. The scheme, too, facilitates the transfer of contributors from one branch of the teaching service to another; it provides for entrants up to fifty-five years of age, but penalises, or rather

refuses to benefit, those who voluntarily cease work before reaching the advanced age of sixty-five.

Other authorities in England might well follow the example of the L.C.C.; but as its position is unique in this country, comparisons can hardly be made. Comparisons with other European cities, however, are instructive. In Berlin, for example, the salaries are somewhat better, the average increments being larger, the maximum higher, and a house allowance of £60 a year being added.

The provision for retirement is considerably better. No deduction whatever is made from salary; £40 of the rent allowance is counted in computing pensions; the pension is a percentage of the last salary. A master is entitled to a pension after ten years' service; it is then 25 per cent. of his salary, and increases 1⅔ per cent. for each year of service, so reaching 75 per cent. after forty years' service. Nor is this all. His widow receives 40 per cent. of the pension to which he is entitled at the time of his death, and a further allowance is made to orphans up to the age of eighteen of 20 per cent. of the widow's allowance, if the widow is still alive, or 33⅓ per cent. of the widow's allowance if both parents are dead. The total, however, must not exceed the father's pension.

This scheme applies not only to Berlin, but to all the towns in Prussia. All the German States make similar provision; those in some States are even more liberal. There is yet, then, something to be done before the L.C.C. has completed "that great movement which is in progress for making the educational system of London rank first among the great cities of the world."

The Scottish Act and the L.C.C. schemes are the two achievements of the last three years in the provision of superannuation for teachers. Other suggestions have been made, notable among which is the Local Government Officers Superannuation Bill. It formulates a contributory scheme for all servants of local authorities, and, if it becomes law, some teachers perforce will come under it. Those teachers who are in schools maintained by local authorities are Local Government officers, those in aided schools apparently are not, those in endowed schools not aided by a local authority certainly are not. The effect, then, of obtaining pensions for teachers, not as teachers but as Local Government officers, would be to divide teachers into two classes—those in municipal or maintained schools and those in other schools. Such a division would bring with it all the evils attendant upon class distinction, and would, therefore, be greatly detrimental to the interests of education.

Almost all the secondary-school organisations have been, or are, discussing superannuation, and it is not too much to hope that some form of agreement will result from their discussions. There should not be much difficulty in obtaining unanimity. The ultimate aim of governing bodies, headmasters, and masters are all the same, and the same as that of the nation, the parents, and the individual: it is efficiency in education. To procure this the most important factor is the teacher; and in order to secure as teachers the men and women best fitted for their work, the teaching profession must be recognised as such, and its members must be suitably rewarded. It can never become—indeed, it is perhaps not desirable that it should become—a lucrative profession; but at least its members must be assured that they are not to end their days in penury. What, then, is required is a pension scheme; it must be such that schoolmasters can migrate from school to school, from town to town, from authority to authority without prejudicing their pension rights; it should be equally applicable to all efficient schools; it should be compulsory in the case of all schools aided by public money, whether from the Treasury, the rates, or endowment; no school should be recognised as efficient the governors or proprietors of which do not adopt it; it should be guaranteed by Government; it should, in short, be a national scheme.

THE TEACHING OF LETTER-WRITING.

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THE teaching of letter-writing is a much more mechanical and formal process than the teaching of composition, and consequently much more mechanical means have to be adopted.

To begin by telling the boys to write to a friend a letter describing the school, the town they live in, or some other such subject, may form an agreeable change from the ordinary essay or composition lesson; but it gives very little practice in real letter-writing. Of course, many of the boys will put an address at the top of their paper; some will even begin by the words "Dear Friend"; and there may be a few who will remember to the end that they are writing a letter, and will conclude in the orthodox way. But if the boys were to write a letter of this kind every day nothing more than that would be learnt of the art of letter-writing. In exercises such as this the attention is being devoted to the matter. That it happens to be a letter is a fact which only concerns the beginning and the end. Thus very little of formal letter-writing is being learnt.

No originality is wanted in the arrangement and form of letters, and the expression is largely a matter of convention. Therefore the boys can learn more by actual imitation of models than is possible in any other kind of composition; and, moreover, points of expression and form can be acquired more quickly by imitation than by any other method. Boys of twelve or thirteen soon pick up all the desirable conventions of letter-writing if set to copy good models.

A good way to begin is to give to the boys a short letter of the following, or a similar, kind to transcribe word for word:

Field House,
Durham,
27/vii./99.

Messrs. Green and White, Leeds.

GENTLEMEN,

Please send to me at the above address as soon as possible one of your "Demon" Cricket Bats as advertised in the "Boys' Own Paper" of this week.

I enclose P.O. for 10/6 in payment.

Yours, &c.,
JOHN SMITH.

To copy word for word a model of this kind may at first glance appear to be wasted time, but experience proves the contrary to be the case. It can be copied in a few minutes, and the form will be more clearly impressed on the minds of the boys by this process than it would be if they were simply given directions how to do it and then left to write a letter on the plan, or even if the model were shown to them and they were then expected to be able to compose a letter similar to it in plan. As a matter of fact, in the first few cases the boys find that the difficulties of spacing out the different parts of the letter correctly are quite enough to attend to at once. The teacher should tell them where each item of the letter ought to be written; and also he should discuss for a few minutes the reasons for each part of the letter. The boys can easily see the necessity for the full address at the top and for the signature at the end. It is only necessary to point out the equal desirability of brevity and clearness in letters of this type.

With boys of this age the difficulties of spacing out the parts properly are partly due to the size of their writing and partly to a mistaken sense of economy, which makes boys cram all they possibly can into some particular corner of the paper. It also seems impossible at first to persuade some boys not to put too many items on one line; and, in spite of repeated warnings and in defiance of the copy supplied, many boys will persist in putting the address, the date, and even occasionally "Dear Sir," all on the same line. Thus the copying of a model letter is not by any means the waste of time it appears to be, because from it the boys not only learn the method of arrangement and wording, but they also get the necessary ideas of spacing and practice in it.

After having written a presentable copy of this letter the boys can be set to write others of a similar kind. In one lesson of forty minutes some boys will be able to write out the original letter and four others of the same type. It is always best to be content with teaching one type of letter in one lesson. To attempt to do more confuses the boys, so that they learn neither type correctly. This does not mean that later a letter of a kind formerly learnt should not be written during the same lesson as a newly presented model. On the contrary, letters with suitable answers should be taken together in later lessons; for, besides adding a little variety to a letter-writing lesson, this forms an admirable method of recapitulating all forms of correspondence learnt. At first the slow writers will perhaps manage to write only one letter after copying the model; but after having a little practice they become much more speedy.

When the model of any particular type has been copied, the subject of the letters the boys are to compose should always be given; otherwise much precious time is wasted by the boys in inventing matter, names of tradesmen, and so on. For the same reason the boys should be allowed to use their own names and addresses when composing letters themselves.

It is very useful to have a number of exercises ready in which all the details required for the letters are supplied. Then, after copying the model, the boys will be able to proceed with their own letters without further help. It is advisable to have many exercises, because in every class some boys are much quicker than others; and to attempt to keep them all at the same pace is to waste both energy and time. For example, the blackboard might contain the following exercises on the letter given above:

(1) Order one dozen tennis balls, price 10*s.* 6*d.* per doz., from Gamage's, Holborn, London.

(2) Write for basket of fish to Field & Co., Yarmouth. Enclose 5*s.*

(3) Send 20*s.* for selection of toys to London Toy Company, Strand.

(4) Order book you would like from Wood & Jones, New Street, Birmingham.

But a more interesting way, and at the same time a more convenient way, is to use a newspaper, and allow the boys to select advertisements and order goods from them. This method can be used for almost all types of correspondence taught in schools.

It will generally be found that the boys master one type of letter in one lesson, and that at the end of the lesson every boy will have himself written at least one letter in the correct way.

In the next lesson a somewhat similar letter should be taken—for example, one asking for goods to be sent on approval, which should be followed by a letter enclosed with the goods returned after selection has been made. At this point, except in so far as it provides variety, the subject is of very little importance. What is important is that, in every new letter, some variety of form should be introduced, so that the boys gradually become acquainted with all the different methods of expression in correspondence. For instance, in the second letter this form might be adopted:

14, Town Street,
Saltburn,
August 4th, 1899.

DEAR SIRS,

I should be greatly obliged if you would send me a few fountain pens, from which I can select one.

I will return those not required as soon as the selection is made, and will send with them the money for the one chosen.

Sincerely yours,
CHAS. FOX.

Messrs. Johnson and Co.,
12, New Court,
Middlesbrough.

There it can be pointed out that, though the address of the sender and the date are in the same place, the name and address of the people to whom the letter is sent are at the end instead of at the begining, and the letter begins by the words "Dear Sirs" instead of "Gentlemen." It should be explained that these points are quite optional before the boys are set to copy out the letter and then to use it as a model. Even then it will be found that many boys will put the name and address both at the top of the letter and in the bottom left-hand corner; but mistakes of that kind can only be cured by practice.

Of this kind of correspondence there is an enormous variety to select from, and the exercises on each type are infinite in number. One important thing is to take so many different types that the boys begin to see the sameness which is found in all the varieties. Another thing to be careful of at this point is to take short letters only, so that three or four of each type can be written in one lesson.

Later two letters can be taken in one lesson. In that case two models should be given, and they should have relation to one another, so that the boys learn the correct method of replying to letters, and see how the address and signature of one letter are useful in writing the reply. For example, the first letter could be one to order certain goods, the second the letter enclosed with the goods, and the third the letter acknowledging receipt of goods and enclosing payment.

By this method, in half a dozen short lessons, or even less, all forms of this kind of correspondence could be learnt by the boys, and in the further lessons no difficulties about the method of arranging the parts of a letter ought to occur.

Then we get on to the longer letters, where the art of composition and selection of material become of greater importance than the conventional forms, which by this time will have become almost habitual.

A fascinating subject for boys, and one which might easily be taken next, is the writing of applications for situations. It is particularly suitable at this point, because in composing such a letter the selection of material is the great difficulty. The daily paper gives plenty of material for exercises. An advertisement should be chosen and considered by the whole class before the model letter is written. Thus in an interesting way the boys see the letter being built up and the reasons for the different parts; *e.g.*, a paragraph stating the object of the letter, in which mention of the advertisement can be made, a paragraph stating qualifications, a paragraph giving references, a paragraph suggesting an interview, and so on.

After having made the model, the boys find it very interesting to select advertisements and make applications for situations in their own name. The value of this type of letter is the ease with which boys can be made to distinguish in them what is relevant from what is irrelevant. Thus they gradually begin to formulate for themselves rules which point out the necessity for uniform method of arrangement, for the conventional forms of beginning and end, for brevity and for relevance.

The next stage is that of writing more informal letters, where the copying of models can often be omitted, and such exercises given as the following:

(1) Write a letter to a friend asking him to spend a week with you at the seaside.

(2) Write a letter accepting this invitation.

(3) Write a letter saying you are unable to accept the invitation, and give reasons.

(It is quite unnecessary to learn in school how to write the more formal invitations, which are quite distinct from letters.)

This is quite an important stage in teaching the art of letter-writing, because it is only when the boys begin to write letters of the kind they have been in the habit of writing in their out-of-school life, that the mistakes they have been in the habit of making become most evident. For example, the phrases which seem to be part of the stock-in-trade of all people who are unaccustomed to letter-writing will begin to reappear in great numbers. It is surprising how often "I take up my pen," "Just a few lines," "Finds you well as it leaves me at present," and that sort of thing will be repeated in one class. The teacher should point out exactly why such phrases, and others that may be more prevalent in other districts, are objectionable, and should discourage the use of them. At this point the aim should be to get the boys to write as natural a letter as possible. Brevity is not now essential, and freedom from stereotyped phrases should be cultivated. But the teacher must not make the mistake of imagining that because the letters are to be written in a natural style they will be more easily written, and less care will be required in the teaching. If that were the case the boys might begin with letters of this kind and then proceed to the more formal type later. But it is not so; more skill is required to write naturally with ease and freedom; and continual practice and criticism is required before the boys can rid themselves of the stiff and awkward style which is the besetting sin of the beginner in letter-writing.

It is also useful to give some practice in the writing of postcards, as in that the style of composition is quite different. One model can be given to show how the "Dear Sir" or its equivalent can be omitted, and another model is necessary to show how postcards can with advantage be written in the third person. More practice is often required in writing in the third person than in any other part of correspondence. The rules are easily explained and understood; but it is only long practice that will enable boys to use this form with ease. The advantages of its use on postcards for certain purposes are obvious.

Frequent opportunities for the addressing of envelopes arise in the course of school business. It is a good plan for the boys of the lower forms to address the envelopes when possible. Punctuation of addresses can then be taught, and the

boys get practice in spacing them out. It may seem a very small point, but it is highly desirable that all boys should be able to address an envelope in a presentable style. At the same time they can be shown how to fold the notepaper, which way to put it in the envelope, and details of that kind.

Thus in a short time most of the more useful forms of correspondence can be learnt by boys of about twelve or thirteen years of age. After that, occasional practice in letter-writing can be given as a change from the regular weekly essay. The letter form is particularly suitable for certain kinds of essays. Suppose the form has been reading "Evangeline," and the essay wanted is one describing the life of the Acadians before their expulsion from Acadia, it greatly helps the boys to describe things vividly and fully, as though to someone who knew nothing about it, if they suppose themselves to be Acadians writing a letter to friends in France. In the same way the letter form is equally suitable for a great variety of other subjects. As an aid to the imagination the letter form is useful in composition, but it is a mistake to think that merely by means of such essays the art of letter-writing can be taught.

CURRENT GEOGRAPHICAL NOTES.

By E. R. WETHEY, M.A., F.R.G.S.
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I. The "New" Garden of Eden.

TEACHERS of geography and of Biblical history should be interested in the latest phase of a world-old subject. "And the Lord God planted a garden eastward in Eden. . . . And a river went out of Eden to water the garden; and from thence it was parted, and became into four heads. The name of the first is Pison . . . and the name of the second river is Gihon . . . and the name of the third river is Hiddekel . . . and the fourth river is Euphrates." So run the well-known words in Genesis (chapter ii., 8–14) which describe the Garden of Eden. And all down the ages has the wit of man naturally attempted to interpret and explain this unique site. Practically every quarter of the universe at some time or other has been laid under contribution to satisfy the description. Probably the oldest idea was that which associated the rivers Ganges and Nile with Pison and Gihon, and placed them in the vicinity of Euphrates and Tigris. Of other and later notions, the best known are Oxus and Indus, Armenia, Lower Babylonia, *i.e.*, down by the Persian Gulf, and Lower Mesopotamia, *i.e.*, the delta of Euphrates and Tigris. Even places so far apart as Scandinavia and the South Sea Islands have been more than hinted at, and all this is exclusive of numerous interpretations by way of allegory and universal myth.

The latest light has been thrown on the old, old problem of Eden's site and its four branching rivers by no less a personage than Sir William Willcocks, already famous as the designer of the Assuan dam in Egypt, and soon to be equally, or even more famous, as "adviser to the Turkish Government" on the subject of irrigation in Mesopotamia. In the course of his preliminary investigations, connected with the object of restoring fertility to a long neglected country, he has made at least two important discoveries which have not as yet had time to creep into school, or any other, atlases. One is that the Euphrates, like all large rivers flowing over an almost flat plain, is once again changing a portion of its bed. The maps show it joining with the Tigris at Kurna. This channel is now blocking, or blocked up, and the new course of the great river is some fifty miles further south, *i.e.*, much nearer Basra. Incidentally a large lake is being formed to the N.W. of Basra (*v.* map). The second discovery is the depression in which lie Lakes Habbania and Abu Dibis, and it is this discovery which supplies the latest commentary on the verses of Genesis. For the future, or at all events until further discoveries are made, the explanation of the verses will be, if we accept Sir William Willcocks as our authority, somewhat as follows. The Garden of Eden comprised the country round and between Anah and Hit. "Upstream of Hit, past Anah," says Sir William, speaking of the country *to-day*, "garden succeeds garden, orchards and date groves lie between fields of cotton, and life and prosperity are before us wherever the water can reach. I do not think it possible to imagine anything more like a practical paradise than the country near Anah. Every tree and crop must have been familiar to Adam, except the cotton crop." The river which watered the original "Paradise" was, of course, the Euphrates, and the four "heads" of its parting began below Hit. They were: (1) the Habbania-Abu Dibis depression, the new discovery of the old bed of the *R. Pison*, now for the most part a dried-up watercourse; (2) the present course of the Euphrates as far as the Nahr Kutha of the early Khalifs, which was probably the main stream of the Euphrates itself in the earliest times: this is the *Gihon* of Genesis; (3) the Sakhlawia branch, leaving the Euphrates almost at its nearest point to the Tigris, which it enters after passing through the hollow of Akkar-Kuf: this is the *Hiddekel* of old; and (4) the rest of the Euphrates after the Nahr Kutha branch, for the river upon which Babylon stood was bound to be *the* Euphrates of the Babylonian era at all events.

II. The Future Irrigation District of Mesopotamia.

So much for the earliest period of Mesopotamia's "past." What is to be its "future"? Has it a future at all in face of its present degradation? Let us see what the reclamation projects are.

The delta of the Tigris-Euphrates begins at the Sakhlawia. This was the district which, intersected by canals in all directions, and controlled by weirs and barrages, was one of the richest and most populous regions of the ancient world. All writers sing its praises. Its civilisation, based

on agriculture, reaches back through Chaldea to the very dawn of history. It comprises some 12,000,000 acres all told, equivalent, that is, to about one-third of the total area of England and Wales. Of this at the present time only about 500,000 acres are of any use at all; the rest is composed of 9,000,000 acres of desert and 2,500,000 of fresh-water malarious swamps. Its modern decline began so far back as the seventh century of our era, when, after the battle of Kadisia, 635 A.D., it was overrun by the Arabs. Ruin followed quickly. The dams were neglected, and the floods came. The consummation arrived as the river here, though 500 miles away from the sea, is only 120 feet above it.

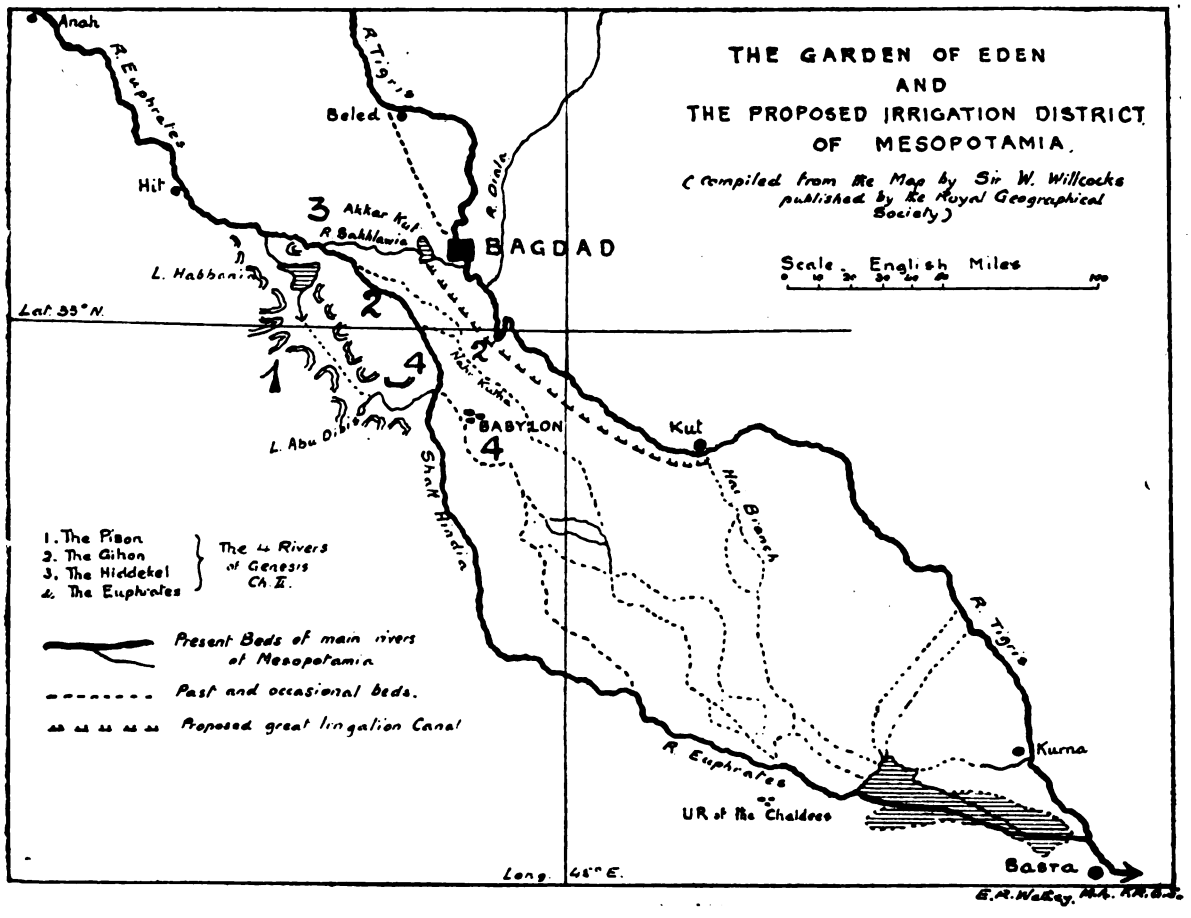
(2) Regulators are to be placed on the Sakhlawia to control the supply leaving the Euphrates.

(3) A great barrage is to be erected further down the Euphrates to control the river itself.

(4) The Tigris is to be similarly controlled by a weir erected at Beled.

(5) A great central canal is to be constructed from Akkar-Kuf to the Hai branch of the Tigris near Kut.

This canal will be the great work. Its left bank is to be high, not only to protect the country



in the thirteenth and fourteenth centuries, under the successive attacks of Zengis Khan and his Mongols and of Timur and his Tatars. An invasion of water had been succeeded by an invasion of blood.

It is this delta which is to be the scene of Sir William Willcocks's labours. The "country with a past" is to return to its past, and there appears to be no reason why the record should not be bettered. Briefly, five great projects are involved:

(1) The old Pison (No. 1 on the map) is to be used as an escape for the surplus waters of the Euphrates. Some such preliminary "control" in so flat a country is patently necessary, from any possible floods of the Tigris, but also to carry a railway for harvest transport. In days to come it alone may irrigate as much as 6,000,000 acres, and turn what is now a dreary waste into a land producing millions of cwts. of cereals and pulses, cotton and sugar. Minerals are there already in places—petroleum, bitumen, sulphur, salt. The railway, too, is but the beginning of a greater project. A *through* line—and this is quite apart from the German "Bagdad" scheme—will connect the Persian Gulf and Mesopotamia with Europe *via* Bagdad, Hit, Anah, Tadmur (the ancient Palmyra), Damascus, or Homs (or both), and two ports on the Syrian coast, Tripoli and Beirut. Navigation matters, one may be sure,

will not escape attention. At present boats of 16 to 18 feet draught cannot get beyond Basra, and even to reach that river port they have to depend upon high water. River steamers go up as far as Bagdad, and there is nominal navigation on the Euphrates up to Hit. There is much room here for the resources of civilisation in the shape of the prosaic dredger. The greatest obstacle to all these undertakings feared by the pessimists is not geographical so much as social. Where is the labour to come from? *Solvitur ambulando.* Given guaranteed wages, any scarcity of labour which may exist, say in 1911, will disappear in 1912.

Those who are interested in this modern aspect of an ancient subject will be well advised to watch the newspapers carefully for "news from Mesopotamia," and to read anything they see written by or under the authority of Sir William Willcocks, especially his magnificent paper in the *Geographical Journal* (vol. xxxv., 1). For of a truth there is a future for Mesopotamia, and that neither dim nor distant.

III. Up-to-date Items from Africa.

Every teacher of geography recognises that "up-to-dateness" is an essential, if his teaching of geography is to be efficient. The difficulty is, in the press of other work, to attain this up-to-dateness. Atlases in the nature of things soon tend to become misleading in details. A continent like Africa, where progress is in many parts continuous, is especially a trial. Here are some of the most recent African developments which necessitate alterations even in atlases published in 1910:

(i) The Anglo-Egyptian Sudan Railway, *i.e.*, the north end of the so-called "Cape-to-Cairo," from Khartum to the south, is now open so far as Senaar on the Blue Nile, some 160 miles from Khartum. None of the atlases show it further than Khartum.

(ii) The Rhodesian Railway, *i.e.*, the south end of the "Cape-to-Cairo," has long passed Broken Hill, and has now crossed the northern frontier of N.W. Rhodesia. At present it is running into the copper district of Congolese Katanga. School atlases show it as either stopping at Broken Hill, or making a bee-line thence for the south end of Lake Tanganyika. To tap this same Katanga district, the Portuguese line from Lobito Bay has advanced 200 miles from the coast in the S.W. corner of Angola. This now leaves a gap of 700 or 800 miles which must be closed before direct railway connection between Rhodesia and the west coast can be established.

(iii) French Congo is now called "French Equatorial Africa." The incorporation of Wadai into French Congo in 1909 made the name, which had already become unsuitable, simply absurd.

(iv) The district round Lado—hitherto known as the "Lado Enclave"—is now incorporated with the Anglo-Egyptian Sudan. This is in accordance with the agreement that it should revert to the Sudan six months after the death of King Leopold II.

(v) The bay in German S.W. Africa, which was originally named "Angra Pequeña" by the Portuguese, and appears as such still on the maps, is, and has been for some time now, called "Lüderitzbucht," after Lüderitz, the Bremen merchant, who was the first to penetrate the hinterland from the coast. What was five or six years ago a little settlement with nine European houses is now a busy port with a crowded township, a stock exchange, and a railway extending more than 200 miles into the interior. Moreover, as diamonds are being found and collected over a wide area to the south, more should be heard of Lüderitzbucht.

(vi) Lake Albert Edward is now called "Lake Edward," and what is always drawn as a N.E. extension, but is now known to be quite a separate lake, has been named "Lake George." These are two of several important results of work done by the Anglo-Congolese Boundary Commission of 1907–9.

(vii) The Mfumbiro range of S. Uganda is now spelt "Mufumbiro," which at the same time gives a much-needed clue to the pronunciation of the word. Its highest point is Karisimbi, 14,794 feet, which, it need hardly be said, has not yet made its appearance in the atlases.

BRITISH TEACHERS FOR WESTERN CANADA.

By ELIZABETH W. PHILLIPS.

THE demand for British teachers in Western Canada came as a surprise to most schoolmasters and schoolmistresses in the United Kingdom. Many have responded to the call, eager to have the opportunity of strengthening British interests in the Canadian portion of our Empire. In a country where mixed races abound it is essential to have teachers who will instil the old British ideals and principles in the minds of the children, and teach them loyalty to the mother-country and the old flag. This is a noble work which none need scorn to undertake, and girls, to whom social status means much, will gain in this respect in Western Canada.

There is a strong and constant demand for properly qualified trained teachers in Alberta and Saskatchewan. The former province alone needs about six hundred additional teachers every year, and provides about two hundred. The eastern provinces supply a certain number, but not nearly enough. Appointments are made by the individual local School Boards, but the Department of Education in Edmonton, Alberta, can always give full information as to vacancies. Teachers with the necessary qualifications are taking no risks in going to Alberta, but before leaving England it is wise to arrange with the Board of Education to forward its official statement certifying to their standing in order to know the value of their certificates in Canada. Non-trained college teachers

and those whose certificates cannot be accepted by the Department are advised to forward official evidence of their academic standing, so that the Department may determine whether such teachers may be admitted to the Normal School at Calgary for professional training. This would entail the cost of living only, for about four months, at the rate of 18*s.* 6*d.* to 22*s.* 6*d.* a week.

The demand for the services of teachers for laundry, cooking, sewing, &c., is as yet limited, but some of the larger schools are now making provision for special departments, such as domestic science, manual training, art, &c., and needs along these lines will rapidly increase.

The Department of Education is taking up with the transportation companies the matter of reduced rates to British teachers, hoping to lessen the cost of the trip.

The average initial salary in rural schools is at present about $600 (£125) per annum; in graded schools in villages or towns where more than one teacher is engaged the salary is a little higher, but varies according to the cost of living in the different parts. In most of the graded schools the yearly increase of salary depends upon the class of certificates held and the length of service. In the larger grade of schools the maximum for men is about $1,000 (£200), and for women about $850 (£170). The principals of town schools and assistants in high schools usually receive from $1,000 to $1,800 per annum.

The cost of living depends largely upon locality. In rural districts, where teachers usually find it necessary to seek accommodation with a farmer, the rate will be from $12 (£2 10*s.*) to $15 (£3) per month. In villages, towns, and cities the cost will be from $20 (£4) to $30 (£6) per month, but this greater outlay will be compensated for by the advantages accruing to town life.

The short time teachers remain in the work is one of the reasons for their continued scarcity in the West. Business and land-getting make the average duration about two years, suggesting to the uninitiated rather a low professional spirit in the teaching craft, which is by no means the case. Western teachers are of a good business type, on the look-out for the many tempting opportunities Canada offers.

The rapidity with which the country is being settled also conduces largely to scarcity of teachers. The Minister of Education has the power to compel the establishment of a school in a district which contains twenty children or more, if the settlers persistently refuse to make the necessary application, but only once has he had to exercise his prerogative. It is very rarely that a solitary vote is polled against the organisation of a school district.

While the officials fully realise that a large number of "permit" teachers is a calamity, they must perforce accept them. "Permit" teachers are those whose standing is not recognised as an equivalent to the Department's lowest grade of certificate, or whose course and training do not correspond to their work. Generally, "permit" teachers are those who have not sufficient professional interest to qualify regularly, or hold expired low-grade certificates from other provinces. The average salary paid to them is as high as that given to the regularly qualified second-class teacher, probably because the last schools supplied are ready to pay a good price for any kind of teacher.

The primary demand of Western Canada is for the primary-school teacher in the country school house. Every opportunity for advancement will be offered, but Canadian methods of teaching are different, and the Department of Education naturally aims at a uniform system throughout the province.

Upon arrival, British teachers holding the proper qualifications are immediately granted an interim certificate, enabling them to teach in the province, receiving permanent certificates as soon as the inspector's reports on their work indicate their capability of fulfilling the requirements of the Department of Education. The authorities get teachers from various provinces and countries, bringing different ideas as to the methods of teaching, so that it is essential to get them reasonably to conform with the ideas of the Department, which are based on local conditions, before granting them permanent certificates. Therefore it is not advisable for older teachers, who have been following their own methods very long and are unable or unwilling to adapt themselves to new conditions, to seek an opening in Western Canada.

Generally, the rural teacher comes into town after about a year. Living in the country, however, possesses many advantages; there the teacher can be really a great power, and may, perhaps, on that account have a better time than in town. The chief drawback to a new teacher would probably be the scattered district, forming a great contrast to the English village, and giving her, no doubt, at first, a sense of loneliness. If, however, she is willing to adapt herself to the people, and to enter into the local affairs, her popularity will be assured; this will be increased should she possess musical talents.

The Alberta schools are constructed according to plans provided by the Minister of Education, and are models of healthy comfort, this status being maintained by the conscientious examination of the school inspectors. The rural school is always a substantial structure, usually "frame," but frequently made of brick and placed as near the centre of the district as possible. Many pupils have two or more miles to travel, and cover the distance by riding or driving. The School Boards are compelled to provide a comfortable stable for the animals, which are somewhat varied, from the insignificant cayuse (Indian pony) to the well-groomed horse.

Visitors in the country sometimes receive a shock of surprise when a small cayuse appears, *en route* to the school house, carrying a goodly load of children, two, three, and sometimes even four being taken by the contented burden-bearer.

These ponies are wiry and strong, and would no doubt feel proud of their task could they know that it is the means of giving their human load the opportunity of education at the school house. I have heard of an occasional child riding on a steer to school. Farmers describe the motion as highly conducive to seasickness, until the rider becomes accustomed to it, but at the best of times it must surely prove a severe form of "rough-riding."

An allowance is made annually by the Provincial Government for the purchase of the works of all the standard authors. Readers are supplied free of charge by the Government, whose ambition it is to teach every child to read, write, spell, and do arithmetic with the smallest possible expense to the parent. The curriculum includes, besides these elementary subjects, history, geography, grammar, composition, elementary algebra and geometry, elementary agriculture, and drawing. When the pupils have completed the above course of studies, questions are prepared by the Minister of Education, which are sent to all the schools, and the pupils write on the subjects taught. The papers are forwarded to the Minister and graded.

The Department of Education has found the foreign element a most encouraging feature of its work. A special officer devotes his time exclusively to moving about among the Galicians in connection with educational work. Their children prove very apt pupils indeed, and through education they and other foreigners will become good Canadian citizens.

The secondary schools have not been given explicit status, and as grants for this work are rather small relative to the capital cost of secondary education, the matter of developing a good class of secondary schools has not yet seized the public mind to the extent it should—a matter for regret to those interested in education. The secondary school performs two useful scholastic offices: that of turning out properly equipped teachers perhaps being no more essential than that of fitting matriculants for the university. There is a probability that the expansion of the secondary-school system will be accompanied by the introduction of practical or specifically useful courses relating to commerce, industry, and homekeeping.

The length of the average school year in Alberta is 210 school days, the long vacation, occurring during the heat of the summer, affording teachers opportunities for camping or any other form of healthy outdoor holiday.

Education is progressing in Alberta, for the Provincial University classes were commenced on September 23rd, 1908, with a class of forty students. Considering that such great universities as McGill and Harvard started with from ten to twenty students, Alberta's university began under promising conditions. At present provision has been made for courses in arts and science, leading to the degrees of B.A. and B.Sc.

University graduates wishing to enter Canada only require, for the time being, a statement signed by the registrar of the university, but undergraduates should state as fully as possible the scope of the work covered in their various subjects. Persons who are not university undergraduates should forward such official evidence as they are in a position to supply, and accompany this where possible by a calendar or syllabus defining the courses covered. It is not advisable for any of these people to "pull up stakes" in England before corresponding with the Canadian education authorities.

The city public school is well worthy of the pride the Canadians take in it. Built of brick, with lofty, airy rooms, these temples of learning are adapted in every respect for the work carried on there. And what a miscellaneous crowd of children are to be seen in the spacious playgrounds, where everybody jostles with everybody, and there is no drawing aside in delicate fashion from some schoolmate because her parents are of humble origin or live in a small house. No; the democracy of the West shows most plainly in the playground, filling the onlooker with warm, optimistic feelings for the future welfare of the country. Here all have the same chance, and the clever child has every opportunity of coming to the fore, knowing that in its own hands lies its future career.

Much has been done to improve these public schools from an educational point of view. In some respects the teaching has taken on a more finished tone. This is noticeable in the primary room, where, instead of the old monotonous methods employed to teach the tiny tots their A B C, fascinating pictures are now given, turning work into play, and play into work. For the older pupils there is now manual training and a fine class of art work, carried on by competent supervision, such expansions showing a steady progress in educational methods.

I think the key to the Canadian child's heart is tactful sympathy, for in the large majority of cases they are easily led, but baulk dreadfully when driven too hard. In some respects they seem more whimsical and quaint than English children, but prove very entertaining owing to their lack of shyness in most cases, and the ability to ask questions and to carry on what at times proves to be quite a learned conversation. Like all children, they have a keen, critical eye, and any teacher who can pass unscathed under their mental searchlight is indeed fortunate.

Quaint little pictures some of them make, with the multiplicity of plaits tied up with ribbon or one long glorious pigtail down the back; with faces inclined to be thin, and lacking the rosy look of English children, caused partly by the dryness of the climate, and perhaps nearly as much by the late hours they keep. Yet strangely lovable children, entering heart and soul into whatever takes their fancy, and enjoying to the top of their bent anything in the shape of a "party."

British teachers who will try to enter to some extent into the hopes and interests of their pupils, who will not forget the kind, encouraging word with its accompanying smile, will surely find that out in the far West their lines have indeed fallen in pleasant places.

SCHOOL EDUCATION IN CAPE COLONY.[1]

THE plan and arrangement of the report of the Superintendent of Education in Cape Colony for the year 1909 are the same as in previous years. Instead, however, of making comparisons with the figures and statements of the immediately preceding report, as has been the usual practice in the past, the comparisons are made with the corresponding facts for the year 1891 or for the year as near to this as existing statistics allowed. This course has been thought appropriate and desirable, being somewhat analogous to a stocktaking, on the eve of the consummation of South African Union. A clear and succinct sketch of the system of education as it now is, with indications of the lines on which development has taken place since Dr. Muir's appointment to the office of Superintendent-General of Education are provided.

In the report on his first year of office, after giving the impressions and judgments he had formed on the Cape educational system at its then stage of development, Dr. Muir thus summarised in the concluding paragraph what he conceived to be the work set before him and the best course to pursue in accomplishing it.

> The lesson for the future, which is to be learned from a perusal of a review of the educational system of the colony, is that *organisation ought to keep pace with growth*. To decree general compulsory education before one has in operation better machinery for producing school buildings, school teachers, &c., would be worse than confusing; to institute School Boards throughout the country before the departmental machinery had been arranged for carefully supervising their labours would be less fatal, but still objectionable. This amounts to saying that there are three predominant requirements, viz., A, departmental organisation; B, compulsory institution of School Boards; C, compulsory attendance of pupils; that all three might be attempted at one time; or that A might be attempted first, and B and C together at a later date; or that A, B, and C might be taken in hand separately and in order. The last of these proposals, more especially if accompanied by certain possible improvements on the existing regulations, is in my opinion the wisest course to follow.

Seventeen years have elapsed since the above was written. The three aims indicated in it were taken up in order as recommended, and it is gratifying to find that they are all now in the final stage of accomplishment.

DEPARTMENTAL ORGANISATION.—First the inspectorate was reorganised so as to make each officer responsible for a definite area; and the said area has since from time to time been diminished while the officer's sphere of duty and responsibility in regard to it have been enlarged. This has tended to a fuller knowledge of local requirements, greater efficiency among managers and teachers, and increased stimulation of duty among parents, both as to regularity of school attendance and length of school life.

The central office was next gradually reorganised, and its work differentiated. The quarterly and annual statistics of the Department were gradually recast, special attention being given to the former because of their value in keeping the eyes of managers, teachers, and inspectors open to signs of progress and retrogression. In 1893 a scheme for an educational survey was designed with the object of showing how the educational wants of any neglected division of the colony could be best ascertained. Next year it was put into operation, and after five years it was completed. An office library of works on education was begun to be formed in 1895, and has since become extensive, great pains having been taken to make it as complete as possible. An *Education Gazette* was started in 1901 to give teachers and school managers early information on all matters of departmental interest.

The main efforts of the Department have been directed towards the provision of an adequate supply of schools for all classes of the community, and to the remodelling of the public-school system in such a way as to make the education provided sound and thorough, and at the same time reasonably broad. The raising of the position of the teacher in all grades of schools has been steadily kept in view, and the means and methods of training teachers for their professional work have been from time to time improved, extended, and developed. Properly designed school curricula—primary and secondary—have been introduced, and great attention has been given to the introduction and fostering of certain subjects previously overlooked but of vital importance as branches of education, the need for instruction in *handiwork* of various kinds being especially emphasised. In order to ensure that the teaching of special subjects should be developed on sound lines, expert instructors were selected and appointed as required. The taste for wholesome reading has been cultivated by the formation of suitable libraries in every class of school.

SCHOOL BOARDS.—The old voluntary system of control based on the liability of guarantors, after enduring for over forty years and doing creditable work, was replaced in 1905 by the institution of School Boards. Exactly ten years of persistent urging had been necessary to bring this change about. Very probably something would have been done earlier, if it had not been for the war. As a matter of fact, the stage of bill-drafting was several times reached. It may be conceded, too, that the Bill of 1905 was all the more thoroughgoing for the delay which had occurred. The Act was promulgated on June 8th, 1905. The great change which it was designed to institute was on the whole effected rapidly and with less friction than might have been expected. By the end of

[1] Extracts from the Report of the Superintendent-General of Education for the Year ending September 30th, 1909.

August, 1908, the control of all State-aided public schools had been duly transferred to the School Boards of their respective areas. At the end of September, 1909, the number of School Boards was 129, with control over 2,070 State-aided schools.

COMPULSORY EDUCATION.—Good progress has been made in the matter of compulsory education, the last of the three matters referred to in 1893. After the expiration of their first year of office, School Boards, by the Act of 1905, had the power of passing a resolution to make school attendance compulsory for all European children between the ages of seven and fourteen years. Kenhardt was the first Board to pass this preliminary resolution. But although this took place in 1906, three weary years had to elapse before the Government could see its way to approve practically of the Board's action. The constant fear was that compulsion would spell extra expenditure, and money was becoming scarce. It was not until the beginning of 1909 that this fear was in part allayed and the Government was induced to give the proposal a trial. On Dr. Muir's suggestion a resolution was taken to make a tentative experiment with *six* school areas. This was definitely done on April 1st, and by September 30th three other areas had been added. By that date, out of a total of 129 School Boards, 52 had adopted the principle of compulsory attendance. At the date of publication of the report compulsion was in actual operation in 91 out of 119 School Board areas.

THE SUPPLY OF SCHOOLS.—From the following table a conception can be formed of the Cape system of schools as it is now and as it was eighteen years ago.

THE SCHOOL SYSTEM OF THE COLONY, 1892–1909.

	1892	1909
High schools	—	41
First-class schools	56	50
Second-class schools	76	101
Third-class schools	337	841
Church A 3 schools	—	35
District boarding schools	12	4
Private farm schools	270	844
Poor (previously circuit) schools	42	276
Evening schools	—	19
Mission schools	458	603
Aborigines' schools	273	705
	1,524	3,699 [1]

In 1899 it was decided to lay the foundation for a system of schools which would ultimately provide secondary education on thoroughly sound lines. A number of the existing first-class schools were accordingly selected with this end in view, and a beginning was made in requiring from them greater strength and higher qualifications in the teaching staff, better-sized upper classes, an improved type of buildings, and more adequately equipped class-rooms. A further definite step was taken in 1906, when an inspector with special qualifications was set aside to give his full attention to carrying out these plans. He was further instructed to try to bring about gradually a change in the organisation of the teaching work so as to have each of the more important school subjects assigned to the care of specialist masters. On all hands it is agreed that the scheme has thus far been eminently successful. The growth in ten years has also been striking, the number of schools having increased by half, and the number of pupils in the upper classes more than threefold.

ENROLMENT AND ATTENDANCE.—At the end of the September quarter, 1909, the enrolment of all pupils, European and coloured, numbered 177,680, and the average daily attendance was 154,233. For 1891 the highest quarterly enrolment stood at 80,320, and the average daily attendance was 58,721. It is thus seen that the number enrolled has considerably more than doubled, and that the average daily attendance has made a much more striking increase, having risen from 73·4 to 86·8 per cent. of the enrolment. This latter change is by far the more noteworthy, not merely because it indicates an increase of children, under regular instruction, from 58,721 to 154,233, but because it implies a rise in ideals on the part of teachers, managers, and parents as regards the importance of education and the consequent value of regularity of attendance.

There have been during the last ten years two periods fatally harmful to the progress of schools. The first was the period of the war. Prior to its outbreak the enrolment had been for three years increasing at the rate of about 10,000 pupils per year on an average. After September, 1899, this increase fell, and in time was changed into a negative quantity; and four years elapsed before the old position was recovered. The second period is that known as the *depression*. This began to make itself manifest in the fourth quarter of 1907, and a single year saw a falling off of 9,100 pupils. Although the year 1909 shows some appearance of recovery, it is quite evident that three full years will have elapsed before the high-water mark of September 30th, 1907, is attained.[1] The two causes, war and depression, thus account for seven unproductive years in the important work of increasing the school population.

TEACHERS.—The total number of teachers whose work was reported on during 1909 was 6,525. Of these 3,802 were employed in European schools and 2,723 in coloured and native schools. Of the total number of teachers employed 60 per cent. were professionally certificated. The percentage is much lowered by the inclusion of the aborigines' schools; in the public schools, for example, a little over 90 per cent. of the teachers were certificated.

In 1891 the total number of teachers employed in State-aided schools was 2,432. Of these forty-two were university graduates. As regards other qualifications, there is no official register. In 1894 for the first time accurate statistics were collected regarding the academic and professional qualification of all teachers employed in State-

[1] If special schools and native training schools be included the number is 3,728.

[1] The second quarter of 1910 has since shown a gain of 10,000 pupils on the year.

aided schools, who in that year numbered 3,686. Only 27·5 of the teachers at work in 1894 had a professional certificate. The school higher and school elementary certificates were reckoned as academic certificates, though they ought not to be, and are not now, so considered. Concerning the great mass of teachers who held no certificate, it may be stated without exaggeration that not only were they untrained for their work, but in many cases had not themselves acquired satisfactorily the elements of a good primary education. So the inspectors reported, and the fact was evidenced by the blunders in the teachers' letters to the head office.

To educationists the most significant advance in the educational condition of the Cape Colony lies in the fact that, though the number of teachers has almost doubled between 1894 and 1909, the percentage of certificated teachers has risen from 27·5 to 60 per cent. of the total number employed, and this although the standard of the certificate examination has been repeatedly raised during the period in question.

The inducement in the Cape for young men and young women of ability to enter the teaching profession are now much greater than in 1891. In three respects there have been important advances. First, the teacher's tenure of office has been rendered more secure. No teacher in a public school can now be dismissed without the sanction of the Education Department. Secondly, teachers' salaries in all grades of schools have been substantially increased, in some cases more than doubled. The maximum salary for the principal of a third-class public school used to be £144; now it is £300. Thirdly, the good service allowance, which carries pension rights, is now open to all classes of teachers, and is fixed on a more liberal basis of computation. Indeed, at the present day the teaching profession in Cape Colony is in a better position, both as regards remuneration and social status, than it is in most English-speaking countries.

EDUCATION IN URUGUAY.

SINCE 1904 the Republic of Uruguay has published every year a volume known as "Anales de Instrucción Primaria." These year-books contain school statistics, and much besides of general interest to the teaching world. They are replete with information concerning schools; new legislative measures; reports and suggestions from the central authorities; articles by experts on various branches of teaching; and translated extracts and reviews of the works of distinguished educationists. Important educational works are often reprinted also, and thus placed within the reach of every Uruguayan schoolmaster, who receives gratuitously a copy of the year-book.

It often happens, therefore, that a humble teacher in some out-of-the-way *pueblo* of Uruguay is in closer touch with the forward movements of the educational world than his brother teacher in England, or in some other centre of enlightenment.

The present year-book[1] contains the reprint of a work little known outside Spanish-speaking countries, but of extraordinary interest nevertheless.

In 1876 the Oriental Republic of Uruguay was in a sad plight. Civil wars, grasping officials, and peculiar economic conditions had brought the country to the verge of ruin. At this moment, José Pedro Varela, a distinguished citizen of the Republic, submitted to the Minister of Home Affairs his work on legislation for schools. "La Legislación Escolar" was destined to initiate one of the most far-reaching revolutions in Uruguay. The book contains a study of the causes of the economic, political, and financial crises of the country, and proves that in the condition of the schools was to be found the explanation of the condition of the country, and that the insolvency of the State was due to the fact that the main source of wealth, the citizen himself, had been neglected or deliberately wasted.

Varela's critical study of the peculiar needs of his country is full of suggestion. His conclusions are of wide application. Glib-tongued politicians, who cannot conceive that the prosperity of a country may depend on other factors than Tariff Reform or Free Trade, Dreadnoughts or disarmament, might with advantage consider Varela's plea for increased expenditure on education:

> Economically considered, man is a capital representing, if not the total, at least a part of what has been spent on clothing him, educating him, and encouraging his development in every way. . . . In the United States every immigrant is valued at 1,000 dollars, this sum representing the average value of an able-bodied man.

Now to what extent is a country justified, for the sake of its own prosperity, in improving its raw material of able-bodied men?

> Public administration does for the community what insurance companies do for the private capitalist. . . . Thus public administration safeguards the existence of society, claiming, against risks, a premium that pays for the services of those whose business it is to preserve social order. These services, however, produce no real wealth; they enable other men to produce; they do not increase public wealth, but merely safeguard it. From the point of view of production and consumption, therefore, public administrators consume without producing.
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> We must make an exception among all the branches of administration in favour of public instruction, for here the capital used is not consumed. . . . It is incorporated under a new form, with the capital represented by the recipients of the instruction.

The teacher is, therefore, the only really profitable civil servant. The inference is obvious. None but a qualified teacher is to be allowed in the schools, and he is to be offered every inducement to increase his efficiency. Throughout the constructive part of Varela's work we find set

[1] "Anales de Instrucción Primaria." Tomo vii. Año 1909.

forth broad principles and lofty aims side by side with sound practical views of what may reasonably be expected from teachers, and what is reasonably due to them.

Some people hold the schoolmaster in contempt. Others claim for him the consideration due to a missionary—an apostle gifted with exceptional qualities, pledged to a life of constant sacrifice beyond the strength of most men. But there is no ground for supposing that schoolmasters are in any way different from men belonging to other professions. With them, as with others, adequate means should be used to stimulate their zeal and encourage them faithfully to discharge their duties.

There is abundant proof that the legislators of Uruguay have taken to heart the teachings of their great educational reformer. Among the "adequate means used to stimulate the zeal" of the teacher, we find a pension scheme, particulars of which may interest those who are working in the schools of England. Those eligible for pensions are men of fifty-five and women of forty-five who have worked in the State schools for twenty-five years. The amount of the pension is as follows. The retiring teacher receives one twenty-fifth of his average salary during the second half of active service, multiplied by his years of service. After twenty-five years' service a Uruguayan schoolmaster retires, therefore, on full pay. Those who, after a minimum of ten years' service, are obliged through ill-health to give up teaching, are allowed one thirtieth of their average salary, multiplied by the years of service. Widows of schoolmasters receive half the sick pay allowance of their husbands. Towards this pension fund teachers contribute yearly 5 per cent. of their salary, and, after retiring, 10 per cent. of their pension.

We note that, in order to swell adequately the pension fund of its teachers, the State claims from all members of the community a substantial duty on inheritances and bequests!

A glance at the official reports[1] upon the condition of the schools in 1908, submitted to the Government of Uruguay by the chief inspectors, is enough to show that the Republic has every reason to be proud of its schools and of their officials. Adequate legislation is not alone responsible for such efficiency. The intense earnestness of the workers is apparent at every page, and behind the criticisms, commendations, and suggestions brought forward by such men as Dr. Abel J. Pérez, the chief inspector, we feel the sympathetic and inspiring personality of the man himself.

Several subjects of great social importance are studied in the articles on "The Elementary School in its Relation to Democracy"; "The Ideal School for Uruguay"; "The Organisation of Cadet Corps"; "The Work of Adult Schools"; "The Proposed Congress of American Delegates for the Discussion of Problems connected with Elementary Education." These articles breathe a magnificent spirit of enlightened patriotism and devotion to the cause of education.

In 1908 the population of Uruguay was 1,039,078. National expenditure amounted to 10,819,973 dollars. The amount devoted to public education was 1,119,816 dollars, more than 10 per cent. of the money devoted to administrative purposes. Uruguay has more inhabitants to the square mile than any of the other South American States, but the country boasts a smaller percentage of illiterate children. The total number of schools (private and public) is 1,073. In these, 89,582 children are registered: 69,134 in the State schools and 20,448 in private schools. About half the private schools are denominational in character. No religious teaching of any kind is given in State schools. It is even proposed, in view of attempts recently made to revive the religious and political agitations of thirty years ago, to inscribe over the main entrances of all buildings under the administration of the Education Board: "Beyond this doorway religion and politics have no business whatever."

[1] "Memoria Correspondiente al Año 1908." Tomos i., ii.

MATHEMATICS IN AUSTRIAN SCHOOLS.

THE Board of Education has published a translation of the new Syllabus of Instruction in Mathematics prescribed for the Gymnasien in Austria.[1] The syllabus may be regarded as the solution offered by the Austrian educational authorities of the problems relating to the teaching of mathematics to boys in secondary schools, and as such is bound to be of great interest to all who are engaged in work of this character in this country.

The syllabus proper is followed by four pages of remarks, containing a statement of the objects which the course of work is desired to attain, and of the principles which have been adopted in the construction of the programme.

The course of study is spread over eight years, and is divided into three stages, lower, intermediate, and upper, occupying three, two, and three years respectively. In the lower stage, instruction is to be given in arithmetic, the beginnings of algebra regarded as a generalised arithmetic, and in geometry. The work in the last subject is to be principally of a practical character, involving the estimation of areas and volumes by measurement and weighing. In the intermediate stage further advance is made in algebra up to the solution of simple equations, while in geometry the pupils are introduced to the Euclidian method of definition and proof, though this is to be subordinated to the inductive and observational method of study.

In the upper stage the pupils are to receive instruction in equations, series, solid geometry, trigonometry, and analytical geometry, including the elements of the differential calculus.

It is impossible in a brief space to discuss all

[1] "Syllabus of Mathematics for the Austrian Gymnasien." ii+10 pp. (Board of Education: Educational Pamphlets, No. 22.) 2d.

the points which thrust themselves upon one's notice. A number of the reforms suggested have already been adopted by many teachers in this country, such as drawing into closer connection studies essentially related, especially algebra and geometry.

The time allotted to arithmetic would probably be found insufficient in this country, for we are handicapped by our system of weights and measures. It is obvious that, apart from the time required to commit the tables to memory, calculations made with scales of notation in which a new radix is used at each step must always be more troublesome than those made with a uniform decimal system. We do not think that we can be very far wrong in estimating that the adoption of the decimal system would result in the saving of a year from the time given to elementary work.

The syllabus lays great stress upon the necessity at the outset of continual reference to the fundamental axioms in connection with the solution of problems in algebra. This is a matter to which teachers in this country rarely devote sufficient attention. It is distressing to observe the purely mechanical and unintelligent manner in which the majority of boys attack algebraic exercises. Under present conditions, the solution of arithmetical problems appears to afford a much more valuable mental training than the solution of algebraic ones, for in dealing with the former the boy has to understand clearly the reason of each step, while the treatment of the latter too often resembles the dropping of a mass of symbols into a mill, and turning the handle until the pupil is tired, or until some result, correct or otherwise, drops out.

Of other noteworthy features of the syllabus we can only direct attention to two. The first is the combination from the earliest stages of instruction in solid as well as in plane geometry. One of the primary objects of the programme is the "cultivation of the power of thinking in three dimensions supported by incidental handwork on the part of the pupil (making of drawings, models, &c.)." All teachers of university classes know how limited at the outset is the power possessed by their students of dealing with three-dimensional problems. Space as perceived by the eyes is practically a two-dimensional space, and the assistance of other senses has to be invoked in order to bring into clear consciousness the third dimension. Hence the value of model construction.

The other noteworthy feature is the importance attached to the idea of functionality. "The notion of function is recognised as the idea which differentiates higher from elementary mathematics, and a full grasp of it is held to be the proper aim of school teaching. . . . Concrete instances are to be used in the lower classes to cultivate the functional habit of looking at things, but the complete generalisation to $y=f(x)$ is to be postponed till the end of the school course." It is needless to insist upon this, as the value of the functional idea or its equivalent, correlated variation, and of its manifold aspects in relation to all branches of thought and activity are becoming more and more clearly realised.

The syllabus has yet to be submitted to the test of practice, and the International Congress of Mathematicians at Cambridge in 1912 is too close at hand for it to be possible to report upon the results, but it provides a basis for discussion, and we have no doubt that in many respects it indicates the path of progress.

THE EXPERIMENTS OF BOYLE AND OF MARIOTTE ON THE PRESSURE OF AIR.

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BOYLE'S Law is studied practically and theoretically so early in school courses of physics, and occupies so prominent a position in them, that it would seem especially interesting to have the actual experimental results of the discoverer to exhibit to the classes. There is also the interesting fact that the law goes under the name of Mariotte in many foreign textbooks even at the present time. Now the writer has often found that boys are interested in the history of the experiments they carry out and of the theories they are called upon to study; possibly, therefore, the following brief account will be found of use.

BOYLE'S EXPERIMENTS.—The Honourable Robert Boyle (1627–92) during 1657 read an account of Guericke's experiments with an air-pump given in Schott's "Mechanica hydraulico-pneumatica," and with his assistant, the famous Robert Hooke, set to work to improve upon Guericke's methods. In Schott's "Technica Curiosa" (1664) will be found some very clear drawings of Guericke's apparatus, including the Magdeburg hemispheres drawn by eight horses. His method of exhausting a vessel consisted in first filling it with water and then removing the latter by pumping. Boyle's air-pump was known as the "Machina Boyleana," and is the real air-pump of which the construction until recent times has remained the same. Boyle's experiments with his air-pump were carried out in 1659, and his results were published in 1660 at Oxford, under the following title: "New Experiments Physico-Mechanical, touching the Spring of the Air, and its Effects; Made, for the most Part, in a New Pneumatical Engine. Written by Way of Letter to the Right Honourable Charles Lord Viscount of Dungarvan, eldest Son to the Earl of Corke."

It should be remembered that at this time results due to atmospheric pressure, such as that in the Torricellian experiment, were usually explained by nature's abhorrence of a vacuum. Boyle describes forty-three experiments in 117 quarto pages—the space occupied giving some idea of the prolixity of his style—and he explains them on the principle that the atmosphere exerts a pressure by reason of the "spring" of the air.[1]

[1] A second series of fifty experiments was published in 1669 under the title "A Continuation of New Experiments."

The contents of this very long "letter" to his nephew are shown clearly in the following account by Thomas Birch in a life of Boyle published with his works in 1744:

In this discourse he discovered and demonstrated the elastic power or spring of the air, and by this means exploded the notion of a *Fuga Vacui*, and showed that the strange effects, which were before ascribed to that imaginary cause, arise merely from the native self-expansion of the air. The extent of which elastic expansion he found divers ways to measure by his engine, which likewise discovers the influence which the air hath upon flame, smoke, and fire; that it hath none in magnetical operations; that it is probably greatly interspersed in the pores of water, and compressed by the incumbent atmosphere even in these close recesses: what operation the exsuction of the air hath on other liquors, as oil, wine, spirit of vinegar, milk, eggs, spirit of urine, solution of tartar, and spirit of wine; the gravity and expansion of air under water: the effect of the air in the vibrations of pendulums, and in the propagation of sounds: that fumes and vapours ascend by reason of the gravity of the ambient air, and not from their own positive levity: the nature of suction, the cause of filtration, and the rising of the water in siphons: the nature of respiration, illustrated by trials made on several kinds of animals, and the effects of the air in the operations of corrosive liquors. However, this work, which was likewise translated into Latin, was attacked by *Franciscus Linus* and Mr. *Thomas Hobbes* of *Malmesbury*; which occasioned Mr. *Boyle* to subjoin to a second edition of it, printed at London 1662, in 4to, *A Defence of the Doctrine touching the Spring of the Air against the objections of* Linus, *wherewith the Objector's* Funicular Hypothesis *is examined; and an Examen of Mr.* Tho. Hobbes's Dialogus Physicus de Natura Aeris; *with an Appendix touching Mr.* Hobbes's *Doctrine of Fluidity and Firmness.*

The following are two extracts from this "Defence," and will give some idea of the theories with which Boyle had to contend:

A Defence of Mr. Robert Boyle's Explications of his *Physico-Mechanical Experiments*, against Franciscus Linus. "Although our author confesses in his second chapter, that the air has a spring as well as a weight, yet he resolutely denies that spring to be near great enough to perform those things which his adversaries . . . ascribe to it. And his whole fourth chapter, as the title declares, is employed to prove that the spring of the air is unable in a close place to keep the mercury suspended in the Torricellian experiments."

Linus had objected that in the case in which the mercury was standing in a tube at a height less than that of the barometer, some air being above the mercury and the tube closed with the finger, the finger was "sucked in" and not pressed.

The hypothesis that the examiner would, as a better, substitute in the place of ours, is, if I mistake it not, briefly this: that the things we ascribe to the weight or spring of the air are really performed by neither, but by a certain Funiculus, or extremely thin substance, provided in such cases by nature, *ne detur vacuum*, which being extremely rarefied by a forcible distension, does perpetually and strongly endeavour to contract itself into dimensions more agreeable to the nature of the distended body; and consequently does violently attract all the bodies whereunto it is contiguous, if they be not too heavy to be removed by it.

To show that the "spring" of the air is not only capable of sustaining the Torricellian column, but may be increased by compression, or, on the other hand, decreased by rarefaction, Boyle carried out the two series of experiments which follow, and so demonstrated the truth of what we now know as his law.

Two new Experiments touching the measure of the Force of the Spring of Air compress'd and dilated.

We then took a long glass tube, which, by a dexterous hand and the help of a lamp, was in such a manner crooked at the bottom, that the part turned up was almost parallel to the rest of the tube, and the orifice of this shorter leg of the siphon (if I may so call the whole instrument) being hermetically sealed, the length of it was divided into inches (each of which was subdivided into eight parts) by a streight list of paper, which containing those divisions, was carefully pasted all along it. Then putting in as much quicksilver as served to fill the arch or bended part of the siphon, that the mercury standing in a level might reach in the one leg to the bottom of the divided paper, and just to the same height or horizontal line in the other; we took care, by frequently widening the tube, so that the air might freely pass from one leg into the other by the sides of the mercury (we took, I say, care) that the air at last included in the shorter cylinder should be of the same laxity with the rest of the air about it. This done, we began to pour quicksilver into the longer leg of the siphon, which by its weight pressing up that in the shorter leg, did by degrees streighten the included air: and continuing this pouring in of quicksilver till the air in the shorter leg was by condensation reduced to take up but half the space it possessed (I say, possessed, not filled) before; we cast our eyes upon the longer leg of the glass, on which was likewise pasted a list of paper carefully divided into inches and parts, and we observed, not without delight and satisfaction, that the quicksilver in that longer part of the tube was 29 inches higher than the other. Now that this observation does both very well agree with and confirm our hypothesis, will be easily discerned by him, that takes notice what we teach; and Monsieur Paschal and our English friend's experiments[1] prove, that the greater the weight is that leans upon the air, the more forcible is its endeavour of dilatation, and consequently its power of resistance (as other springs are stronger when bent by greater weights). . . .

We were hindered from prosecuting the trial at that time by the casual breaking of the tube. But because an accurate experiment of this nature would be of great importance to the doctrine of the spring of the air, and has not yet been made (that I know) by any man; and because also it is more uneasy to be made than one would think, in regard of the difficulty as well of procuring crooked tubes fit for the purpose, as of making a just estimate of the true place of the protuberant mercury's surface; I suppose it will not be unwelcome to the reader, to be informed. . . .

Here Boyle gives an account of his difficulties, the final tube being "of a pretty bigness," with which he obtained the series of results shown

[1] The fall in the height of the mercury column when a barometer is carried up a hill.

below. The shorter limb "admitted a list of paper, which had before been divided into 12 inches and their quarters, and the longer leg admitted another list of paper of divers feet in length, and divided after the same manner."

A Table of the Condensation of the Air.

A	B	C	D	E
12	00		29 2/8	29 2/8
11½	01 1/8		30 1/8	30 2/8
11	02 1/8		31 1/8	31 2/8
10½	04 1/8		33 1/8	33 1/8
10	06 1/8		35 1/8	35
9½	07 1/8		37 1/8	36 1/8
9	10 2/8		39 1/8	38 1/8
8½	12 1/8		41 1/8	41 2/8
8	15 1/8	Added to 29⅛ makes	44 1/8	43 1/8
7½	17 1/8		47 1/8	46 3/8
7	21 3/8		50 1/8	50
6½	25 3/8		54 1/8	53 1/8
6	29 1/8		58 1/8	58 2/8
5¾	32 2/8		61 1/8	60 1/8
5½	34 1/8		64 1/8	63 1/8
5¼	37 1/8		67 1/8	66 1/8
5	41 1/8		70 1/8	70
4¾	45		74 1/8	73 1/8
4½	48 1/8		77 1/8	77 2/8
4¼	53 1/8		82 1/8	82 1/8
4	58 1/8		87 1/8	87 2/8
3¾	63 1/8		93 1/8	93 1/8
3½	71 1/8		100 1/8	99 2/8
3¼	78 1/8		107 1/8	107 1/8
3	88 1/8		117 1/8	116 1/8

A. The number of equal spaces in the shorter leg, that contained the same parcel of air diversely extended.

B. The height of the mercurial cylinder in the longer leg, that compress'd the air into those dimensions.

C. The height of a mercurial cylinder, that counterbalanc'd the pressure of the atmosphere.

D. The aggregate of the two last columns B and C, exhibiting the pressure sustained by the included air.

E. What that pressure should be according to the *Hypothesis*, that supposes the pressure and expansions to be in reciprocal proportion.

For pressures less than one atmosphere Boyle used a narrow tube placed inside a wider one containing mercury. The inner tube, while still open at the upper end, was lowered until the mercury rose to about one inch from that end, which was then closed with sealing-wax. The exact adjustment of the quantity of air to fill precisely one inch at the atmospheric pressure was made by piercing a small hole in the wax with a hot pin. The inner tube was now raised and the volumes and pressures read off as before, the results being as shown in the following table:

A Table of the Rarefaction of the Air.

A	B	C	D	E
1	00 0/8		29 3/4	29 3/4
1½	10 5/8		19 3/4	19 5/8
2	15 3/8		14 3/4	14 4/8
3	20 4/8		9 3/4	9 1/2
4	22 5/8		7 3/4	7 7/8
5	24 1/8		5 3/4	5 2/8
6	24 4/8		4 3/4	4 2/4
7	25 1/8		4 3/4	4 1/8
8	26 2/8		3 3/4	3 3/4
9	26 3/8		3 3/4	3 1/8
10	26 4/8		3 3/4	2 3/4
12	27 1/8		2 3/4	2 3/4
14	27 1/8		2 3/4	2 1/8
16	27 2/8		2 3/4	1 3/4
18	27 3/8	Subtracted from 29¾ leaves	1 3/4	1 3/4
20	28 1/8		1 3/4	1 3/4
24	28 1/8		1 3/4	1 3/4
28	28 2/8		1 3/4	1 1/4
32	28 1/8		1 3/4	0 1/2

A. The number of equal spaces at the top of the tube, that contained the same parcel of air.

B. The height of the mercurial cylinder, that together with the spring of the included air counterbalanced the pressure of the atmosphere.

C. The pressure of the atmosphere.

D. The complement of B to C, exhibiting the pressure sustained by the included air.

E. What that pressure should be according to the hypothesis.

Boyle's own opinion of these results is seen from the following extract:

Now although we deny not, but that in our table some particulars do not so exactly answer to what our formerly mentioned hypothesis might perchance invite the reader to expect; yet the variations are not so considerable, but that they may probably enough be ascribed to some such want of exactness as in such nice experiments is scarce avoidable. But for all that, till further trial hath more clearly informed me I shall not venture to determine whether or no the intimated theory will hold universally and precisely.

MARIOTTE'S EXPERIMENTS.—Edme Mariotte (1620–84), a member of the Academy of Sciences at Paris, wrote on percussion, the nature of the air, the movements of fluids, pendulums, and on colour. He was one of the earliest to study radiation, and considered the conservation of matter to be a law of nature. The extracts which are here given are taken from his paper on the nature of air (1676), in his collected works as printed at The Hague in 1740.

DISCOURS DE LA NATURE DE L'AIR.

Première propriété de l'air, qui est sa pesanteur.

On a beaucoup plus de peine à croire qu'il a de la pesanteur, et il faut beaucoup de raisonnemens et d'expériences, pour s'en laisser persuader, parce que s'élevant au dessus de l'eau et de toutes les autres liqueurs, on attribue ce mouvement de bas en haut à une légèreté absolue.

Mariotte proves that air has weight from the Torricellian experiment. He extends this proof by immersing the whole barometer in water and showing that, for every 14 inches of depth, the barometric elevation would be an extra inch, since mercury is fourteen times as heavy as water, as proved by the balance.

Seconde propriété de l'air, qui est de pouvoir être condensé et dilaté et d'avoir la vertu du ressort.

Not only can air exert a very large pressure, but, unlike other springs, it does not become weaker in time, and "quelques-uns m'ont dit avoir vû des arquebuses à vent chargées depuis plus d'un an, faire le même effet qu'étant chargées de nouveau.

"*Sa condensation se fait selon la proportion des poids dont il est chargé.*"

The first method used by Mariotte for proving this statement consisted in partly filling a barometer tube with mercury and inverting it in a vessel of mercury. The mercury fell in the tube until the pressure of the enclosed air was equal to that of the atmosphere less that due to the column of mercury.

Pour scavoir si cette conséquence étoit veritable, j'en fis l'expérience avec le Sieur Hubin, qui est très expert à faire des barométres et des thermométres de plusieurs sortes. Nous nous servîmes d'un tuyau de quarante pouces, que je fis emplir de mercure jusju'à vingt-sept pouces et demi, afin qu'il y eût douze pouces et demi de l'air, et qu'étant plongé d'un pouce dans le mercure du vaisseau il y eût trente-neuf pouces de reste, pour contenir quatorze pouces de mercure et vingt-cinq pouces de l'air dilaté au double. Je ne fus point trompé dans mon attente: car le boub du tuyau renversé étant plongé dans le mercure du vaisseau, celui du tuyau descendit, et après quelques balancemens, il s'arrêta à quatorze pouces de hauteur; et par conséquent l'air enfermé qui occupoit alors vingt-cinq pouces, etoit dilaté au double de celui qu'on y avoit enfermé, qui n'occupoit que douze pouces et demi.

The experiment was repeated many times, using various quantities of air and tubes of various diameters, and Mariotte concluded that one could take it as a fixed rule or law of nature, that air condenses in proportion to the weight it supports.

A second method is the same as that used by Boyle. The longer limb is to be about 8 feet in length and the shorter one 12 inches.

A table of results is not given, but illustrative numbers are used, so that it is not possible to see with what accuracy the experiments were carried out.

Several problems follow, such as that to find how much air must be left in the barometer tube when partly filling it in order that the mercury, on inversion of the tube, shall stand at a given height.

Perhaps the reason why Mariotte's name was attached to the law of pressures and volumes instead of that of the earlier discoverer, was that Boyle's works were published in 1677 at Geneva in Latin, a year later than Mariotte's discourse was written, and that his separate works in English were not well known. In this Geneva edition the separate works were neither dated nor were they placed in the right order. Boyle complained to the secretary of the Royal Society of this want of correct order—"which the reader was to be informed of, that by comparing the several true dates of the first edition of this author's works with the books of others, since printed, the priority of the experiments and considerations, respectively contained in them, may be truly stated."

PERSONAL PARAGRAPHS.

IT is announced that Mr. Philip Bearcroft, the Bursar of Giggleswick School, is about to retire from his office. He was educated at Keble College, and took honours in history in 1874. He will have served the school for thirty-two years. Mr. R. N. Douglas, the headmaster of Giggleswick, writes to the *Times* to say that the occasion of the old boys' football match will be utilised to bid Mr. Bearcroft farewell, and that an old boys' dinner will be held at the Ashfield Hotel. I venture to reproduce this information here in the hope that it may meet the eye of some whom it may concern.

* * *

MR. BEARCROFT'S record of years of service was beaten by the late Mr. A. M. Massingham by one year. He was senior classical master at Darlington Grammar School, where he had worked since 1877. He was an exhibitioner of Christ Church, Oxford, and took honours in classical "Mods." in 1874. He was one of the few who gathered round Mr. Montgomery, of Uckfield, to found the Assistant-masters' Association in 1891, and was a pioneer of that cause in the north.

* * *

ANOTHER bursar of thirty-three years' standing has recently died. Alderman T. F. Kirby was born in 1836, educated at Eton and Trinity, Cambridge, took a first class in classics in 1859, and was elected Fellow of Trinity in 1861. He was called to the Bar of Lincoln's Inn in 1866. He had been bursar of Winchester College since 1877. He was a magistrate for Hants, and had been Mayor of Winchester. He was the author of "Winchester Scholars and Annals of Winchester College."

* * *

THE recent death of Miss Winifred Bryers puts a premature close to a very promising career. She was a lecturer in mediæval and modern languages at Girton College, Cambridge, and only thirty years of age at the time of her death. In 1904 she took first-class honours in the mediæval and modern language tripos.

* * *

PROF. M. E. SADLER had a few cheerful things to say at the opening of the session of the Birkbeck College. During the last few years we have been working our way to a more synthetic view of English education; there has been a growing attempt to secure unity of administration and unity of national policy. Immense improvements have been made in the provision of English schools and in the linking of schools to one another. In no country in the world has so much thought and effort been given to educational matters as in this country during the last few years. We mostly hear of our shortcomings: for this relief much thanks.

* * *

HARTLEY University College, Southampton, we believe, is more or less on its trial. Local energy and generosity seems bent on securing its future prosperity. Its latest windfall is a gift of £2,000 towards the building fund for a new college. Sir George Cooper, the donor, who is vice-president of the college, also promises a donation towards the upkeep of the building. We learn that a site has been secured at Highfield, a suburb of Southampton.

* * *

IN the November issue of THE SCHOOL WORLD I had no space to dwell upon the life-work of Mr. J. W. Clark, who died at Cambridge in October. He was a man who had been known to and the friend of an exceptional number of Cambridge undergraduates. He was distinguished by his kindness and by his remarkable versatility. Educated at Eton, he went up to Cambridge as a scholar of Trinity, and took a first in the classical tripos in 1856. After taking his degree, he travelled extensively on the Continent, and developed his antiquarian tastes. As superintendent of the Museum of Zoology during twenty-five years, he did a great work in promoting the study of the natural sciences. But his tireless energy carried his pen into many regions, to deal with topography, biography, bibliography, and archæology. Perhaps the best known of his books are "Cambridge" (1880), "Architectural History of the

University and Colleges of Cambridge" (1886), "Libraries in the Mediæval and Renaissance Periods" (1894), and "Augustinian Priory Observances" (1897). One of the channels which most carried undergraduate interests into his life was the "A.D.C.," of which society he was elected an honorary member in 1861. He was its first secretary and treasurer, and contributed largely to its success. He was elected Registrary of the University in 1891, and held that office to within ten days of his death. He was a keen Liberal in university affairs and imperial politics.

* * *

IN the sister University, Dr. William Ince, who died on November 13th, was equally remarkable as a staunch Conservative, although he had long favoured an alteration in the rubric of the *Quicunque Vult*. He was born in 1825, educated at King's College, London, and at Lincoln, Oxford, where he was a scholar, and took a first in Lit. Hum. in 1846. He was elected fellow of Exeter in 1847, and was appointed tutor in 1850. From 1857 he held the office of sub-rector of the college for twenty-one years, effecting much for the college by his kindly personal influence and his sincere and practical sermons. He was appointed canon of Christ Church and Regius professor of divinity in 1878. As a theologian he was marked rather by a broad general knowledge of his subject than by originality.

* * *

THE REV. W. C. COMPTON has resigned the headmastership of Dover College after eighteen years' work. He has been a keen member of the Classical Association, and has interested himself in the co-operative travel of scholars to Greece and the Mediterranean. He has written several good school books, including a Greek Syntax, and a capital little edition of Caesar, Book VII., in which he gives the results of investigations on the spot into the topography of Caesar's seventh campaign in Gaul. He has been preferred to the living of Sandhurst by the Archbishop of Canterbury. His successor at Dover College will be the Rev. Franklyn de Winton Lushington, headmaster of Elstree Preparatory School since 1903.

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THE reins at Elstree will be taken up by Mr. E. L. Sanderson, eldest son of the late Rev. L. Sanderson, for thirty years headmaster of Elstree.

ONLOOKER.

Preparatory Arithmetic. By F. C. Boon. 160 pp. (Mills and Boon.) 1*s*.—A capital book for use in the lower classes. Excellent features are the large number of oral examples, the importance attached to checks and verifications, and the worked examples showing the way in which the work should be written out. We think, however, that it is a mistake to introduce contracted multiplication and division at an early stage. Although once in favour of the use of these methods, extended experience has shown us that, as a rule, they are imperfectly understood and very soon forgotten.

A HISTORY OF ENGLISH POETRY.[1]

WE have read this volume with much interest. It does not contain new and startling criticism; it is a history, not a criticism; but it is a pleasant flowing narrative, of which the only dull parts are the biographical paragraphs. It is useful, no doubt, even necessary, to have these details about the authors; but they are excrescences, and they should be put into paragraphs of small print, that the reader may skip them (as he does anyhow), and the student may grub in them for what he wants.

The frequent specimens from forgotten or obscure poets are amongst the charms of the work. They are always characteristic and well chosen, and they serve a real purpose of illustration. More than one of them has set the present reviewer upon reading more, and he hopes it will have the same effect with others. He is also grateful for being sent back to an old favourite, the *Anti-Jacobin*; and the reader is tempted to wish that Frere and his friends were alive now. They would find plenty to parody in literature, and what a scope in politics!

Mr. Courthope's use of politics as a help to understanding literature is very successful here. His analysis of the revolutionary movements in France and Germany is good; and his explanation of the democratic spirit in Burns and Blake illuminating. The pages on Blake are amongst the best in the book. And that delightful proser, Darwin! What a notion of poetry! Surely he was marked out by fate to be the father of one whose school is the death of poetry. Other authors who are rescued from hardly deserved oblivion are Robert Merry, the genius of the Coterie; he deserves to be remembered as being the cause of laughter in others, and the chief if not only begetter of Gifford.

Some great names come in this period. Besides Burns and Blake, we have Wordsworth, Shelley, Coleridge, and Keats, of whom Mr. Courthope has much to say which is, if not new, at least well said. We are glad to see that he does justice to Crabbe, the genius of realism, whose work, whatever be its merits as poetry, gives a precious picture of English society. His treatment of life is "dramatic and satiric"; his pictures stand out in the memory, never to be forgotten. It is strange, indeed, that the same age and country could produce idealists like Blake, romantics like Byron, and Crabbe's photographic truth. The secret of Byron's power is as well explained here as we ever saw it done. Lastly, we must not omit to mark that Mr. Courthope sees colloquial English at the basis of all real poetry. With a poetic dialect, poetry is a dead thing.

This volume brings Mr. Courthope's work to an end: an achievement of great labour and value, which is, moreover, all agreeable to read, except the biographies.

[1] "A History of English Poetry." By W. J. Courthope. VI. The Romantic Movement in English Poetry, and the Effects of the French Revolution. xxiv+470 pp. (Macmillan.) 10*s*. net.

HISTORY OF ENGLISH LITERATURE.[1]

ONE of the most interesting things in these two massive volumes is a detached page telling the public that two extra volumes will be published, containing illustrative quotations and reproductions of portraits, facsimiles, and the like. For the want of these is the only want of the reader. The volumes now ready are wise guides to the best that has been learnt and thought; and probably nothing quite so full has been attempted in certain sections before.

The origins of the English drama occupy three chapters, the mysteries and miracle plays getting more notice than the moralities. It seems a pity that while we welcome moralities, the mystery should be very rarely attempted in these days of mediæval attractions. A ruined abbey might be used if the English Church declined to allow such "frivolity" in her buildings. An unusual chapter is that on the plays of the university wits. Prof. Saintsbury's chapters on Shakespeare are, of course, of a piece with all the writings of our great critic; but the sonnet question remains unsatisfactory—we feel that the critic himself is not satisfied. Has any definite study of the sonnets themselves been made similar to the loving analysis of Chaucer's rhymes, accomplished in America?

In volume vi. the reader will turn first to the chapter on the Elizabethan theatre, in which the new point is made that what was lacking in scenery was made up for by the wealth of properties. Indeed, a modern stage manager of simple tastes would ask for little scenery, if he could get appropriate accessories for Touchstone and Rosalind, Jaques and Adam. Mr. Child makes an unusual point in defending the taking of women's parts by boys; at any rate, as he in effect says, we might be spared to-day the monstrous unfairness of assigning the part of Everyman to a woman. Prof. Manly, too, directs our attention to the fact that boys could act, and act well, in Shakespeare's day. Mr. Wilson is very contemptuous of Histriomastix, but very sympathetic towards Prynne himself; he does not, however, ask himself whether Prynne, if alive to-day, would issue a second edition. We wonder very much if the Puritan loathing of the stage is dead, or, under modern conditions, is likely to die. Surely the gutter press denounced by *Punch*, and a certain amount of the stage, deserve the mastix still.

It is quite impossible to do justice to the bibliographies: they are the most admirable helps to further study that the advanced student can require. Is it too late to hope that in a later edition of this great work MS. authorities may be added, and when the habitat is in the British Isles the name of the library may be indicated, not only for the MSS. but for the rarer or the Transatlantic books? Many of the books referred to may be looked for in vain near Russell Square. One more word. So far as we can see, no attempt is made to show why Shakespeare is as "popular" as all the other Elizabethans are "unpopular."

[1] "The Cambridge History of English Literature." Vol. v., 508 pp.; Vol. vi., 532 pp. (Cambridge University Press.) 9s. each.

THE ONE THING NEEDFUL.[1]

CRAS amet qui numquam amavit, quique amavit cras amet. We can imagine with what joy this book will be welcomed in the public schools of England. Will it remind them that boxing and wrestling were once great English sports, before the age of police protection, machines, and the Peace Society? If they know anything of these excellent sports, they may see the Greek form of many a familiar trick. Probably they remember Odysseus's upper cut that knocked out Irus, and the sanguinary scene in Theocritus; but they may learn for the first time that the Greeks did not use, perhaps did not allow, much hitting on the body. There was certainly some, as we learn from Theocritus, but the pictures all represent blows at the head, and we never hear of the deadly effect of blows on the mark.

There are many difficult questions connected with the technical side of athletics. Chief is the pentathlon. Here Mr. Gardiner does not greatly modify his views as already set forth in the *Journal of Hellenic Studies*. His discussion of the evidence is excellent, and clearly put; he has the advantage over his German rivals of a more practical acquaintance with athletics. Mr. Gardiner brings out clearly also the true sporting spirit of the Greek, which, like other of his good qualities, seems to decline and disappear in and after the fourth century. In Greece, as in England, professionalism was the bane of true sport. And the Greek ideal of perfectly harmonious development deserves to be recalled in these days of specialisation. It would have been interesting if Mr. Gardiner had tabulated the records and compared them with modern records. One thing the moderns will never equal, Phayllus's jump; if he really jumped it.

Besides the technical part of athletics, we have the historical and the antiquarian. Both are dealt with in the book. The antiquities in particular are very fully illustrated, and these pictures will probably form a quarry for commentators in the future. It is a pity that a picture is not given of the Cretan boxers, earliest of all such, found on a steatite vase in Hagia Triadha. The figures are most instructive, and it is remarkable that they wear something like a cestus on the hand. Mr. Gardiner mentions them, but he does not seem to have seen the vase or a picture of it. The armour on the same vase is equally remarkable and modern-looking; it appears to include metal helmet, cuirass, and greaves. The bull-baiting also deserves more than a mention.

We congratulate Mr. Gardiner on his book, which is written in a scholarly manner, and is full of information. The index (14 pp.) is good.

[1] "Greek Athletic Sports and Festivals." By E. N. Gardiner. Macmillan's Handbooks of Archæology and Antiquities. xxiv+534 pp.; 130 illustrations. (Macmillan.) 10s. 6d.

THE FRENCH MINISTERIAL DECREE ON GRAMMAR.

THE difference between a country where education is efficiently co-ordinated and governed and one where it is not is well exemplified by the recent decree of the Ministre de l'Instruction publique on grammatical terminology. Here for two years a joint committee has been sitting to discuss this very point. Its delegates have been chosen from all the associations of the teaching profession: Modern languages, Classical, English, Headmasters, Headmistresses, Assistant-masters, and Assistant-mistresses. So far an interim report has been issued which has been received with a certain amount of tepid interest, but we should be much surprised if, by reason of its recommendations, one text-book has altered its terminology, or even one teacher has changed the nomenclature of grammar in his class. The old system will go on until the examining bodies take the matter up, as they did the reform of geometrical teaching. But the language men are not so united as their mathematical brethren even in the face of a reform that is admitted necessary by all.

But in France they order these things differently. As with the reform method of teaching modern languages, so with grammatical terminology. The Minister is advised by his Conseil supérieur that a certain reform is necessary; he issues a decree, and after a certain specified delay the reform is adopted, and there is no more to be said. Of course, the old gang grumble, but they obey: after calling a tense the preterite for thirty years, a man will not easily submit to calling it the past definite or perfect or whatever name may be chosen for it. But after the first wrench he does submit, and a Ministerial decree is the best form of wrench. Such hide-bound conservatives as teachers will never obey a scheme put forward by some of themselves.

ARRÊTE RELATIF À LA NOUVELLE NOMENCLATURE GRAMMATICALE.

Le Ministre de l'Instruction publique et des Beaux-Arts. Vu l'avis du conseil supérieur de l'Instruction publique.

Arrête :

Art. 1. Dans les examens et concours relevant du Ministère de l'Instruction publique et correspondant à l'enseignement primaire jusqu'au brevet supérieur inclusivement, à l'enseignement secondaire des garçons et des jeunes filles jusqu'au baccalauréat ou au diplôme de fin d'études inclusivement, la nomenclature grammaticale dont la connaissance est exigible ne pourra dépasser les indications contenues dans le tableau ci-joint.

Art. 2. Le présent arrête sera applicable dès les examens de l'année 1911.

GASTON DOUMERGUE,
Ministre.

NOMENCLATURE GRAMMATICALE.

Première Partie—Les Formes.

Le Nom.

Divisions des noms ... ... Noms propres
Noms communs (simples et composés)
Nombre des noms ... ... Singulier, Pluriel
Genres des noms ... ... Masculin, Féminin

L'Article.

Division des Articles ... ...
1° Article défini
2° Article indéfini
3° Article partitif

Les Pronoms.

Division des pronoms ... ...
1° Personnels ou réfléchis
2° Possessifs
3° Démonstratifs
4° Relatifs
5° Interrogatifs
6° Indéfinis
Personne et nombre des pronoms Singulier, Pluriel
Genres des pronoms ... ... Masculin, Féminin, Neutre
Cas des pronoms ... ... Cas sujet, Cas complément

N.B.—On entend par cas les formes que prennent certains pronoms selon qu'ils sont sujets ou compléments.

L'Adjectif.

Nombres... ... ... Singulier, pluriel
Genres ... ... Masculin, féminin
1° Adjectifs qualificatifs (simples et composés)
Comparatif d'égalité
Comparatif de supériorité
Comparatif d'infériorité
Superlatif relatif
Superlatif absolu
2° Adjectifs numéraux ...
Ordinaux
Cardinaux
3° Adjectifs possessifs
4° Adjectifs démonstratifs
5° Adjectifs interrogatifs
6° Adjectifs indéfinis

Le Verbe.

Verbes et locutions verbales.
Nombres et personnes.
Éléments du Verbe ... ... Radical et terminaison
Verbes auxiliaires ... ... Avoir, être, &c

Formes du verbe ... ...
1° Active
2° Passive
3° Pronominale

Modes du verbe ...
Modes personnels ...
1° Indicatif
2° Conditionnel
3° Impératif
4° Subjonctif
Modes impersonnels ...
Infinitif
Participe

Temps du verbe ... Le présent
Le passé
Le passé simple, le passé composé
L'imparfait
Le passé antérieur
Le plus-que-parfait
Le futur
Futur simple
Futur antérieur

Verbes impersonnels.

La Conjuguaison.

Les verbes de forme active sont rangés en trois groupes :
1° Verbes du type aimer Présent en e
2° Verbes du type finir
Présent en is
Participe en issant
3° Tous les autres verbes

Mots Invariables.

1° Adverbes et locutions adverbiales
2° Prépositions et locutions prépositives
3° Conjonctions et locutions conjonctives ... ...
Conjonctions de coordination
Conjonctions de subordination
4° Interjections

Deuxième Partie—La Syntaxe.

La Proposition.

Termes de la proposition ...
Sujet
Verbe
Attribut
Complément

Emploi du nom ... ... { Sujet / Apposition / Attribut / Complément }

Emploi de l'adjectif ... ... { Épithète / Attribut }

Les compléments.

Presque tous les mots peuvent avoir des compléments. Il y a :

1° Des compléments du nom
2° Des compléments de l'adjectif
3° Des compléments du verbe. Complément direct et complément indirect

Division des propositions.

1° Propositions indépendantes
2° Propositions principales
3° Propositions subordonnées

N.B.—Les propositions principales ou subordonnées peuvent être coordonnées.

Les propositions peuvent avoir des fonctions analogues aux fonctions des noms.

Elles peuvent être ... ... { Proposition sujet / Proposition apposition / Proposition attribut / Proposition complément }

THE TEACHING OF EXPERIMENTAL SCIENCE, ESPECIALLY OF CHEMISTRY.[1]

By ALEX. FINDLAY, M.A., D.Sc., Ph.D.
Lecturer in Physical Chemistry, University of Birmingham.

IN undertaking to address the members of the Birmingham Teachers' Association on the teaching of experimental science, I am very conscious of having undertaken a task, not only of great difficulty, but also of great importance. Whereas the work of this association, as I understand it, deals more especially with teaching in schools, my own experience has been gained mainly from teaching which comes at a later period of the pupil's life; and my direct knowledge of school teaching has been acquired chiefly as an examiner, and from contact with the finished product which the schools turn out. But even thus, the experience so gained may not be altogether valueless in helping one to form some idea of the principles, at least, according to which science teaching in schools should proceed. Conscious as I am, therefore, of my limited knowledge of school teaching, I have come here to-night, not in order to dogmatise or to assume an authority which I do not possess, but to ask for your criticism and to initiate a discussion of certain points which I feel are of the greatest importance for the educational efficiency of our schools.

At the very outset, however, I should like to say that although a somewhat narrow title has been chosen to serve as text for what I have to say this evening, I can, perhaps, most successfully execute my task by treating the subject generally rather than in great detail; and it will be my aim, therefore, to put before you principles of general application rather than schemes and syllabuses of work. This, I trust, will meet with your approval, more especially as all earnest teachers of science are at present waging war with principalities and powers and men in high places for a recognition of the fact that teachers are not, or should not be, mere machines, but living beings with individual characters and the power to think and to do.

[1] A paper read before the Birmingham Teachers' Association.

Although the central theme of our discussion this evening should be the teaching of experimental science, it is necessary to recognise that the principles which will guide our teaching, say, of physics or of chemistry, will depend very largely on our attitude of mind towards the whole problem of school education; on our mental outlook on the whole range of knowledge, not merely of science, but also of letters; and on what we consider to be the aims and objects of school education

The time is now past, I believe, when it is necessary for science teachers to fight for a recognition of the claims of science teaching in schools. In the majority of public schools, and in all secondary schools under the inspection of the Board of Education, science subjects form an integral part of the school curriculum, through which all pupils must pass. The old curriculum was too narrow and too specialised; for while it opened up to the minds of the pupils certain avenues of knowledge, and trained, or was supposed to train, the pupil to appreciate the beauties of literature and the greatness of former civilisations, it too frequently led the pupil away from the actualities of everyday life, and left him not only ignorant of the great facts of the material world around him, but also without any understanding of the laws and relations of natural phenomena and of the forces which operate in the universe as we know it.

Against this older specialisation in schools, educationists of wider outlook revolted, and demanded that science as well as literature should find a place in schools. But in all revolts there is a danger, a danger that fleeing from one extreme we pass only to another. I believe that at the present day there is a danger, in some schools at least, of teaching in certain branches of science bulking too largely in the education of some of the boys. I believe that we as science teachers ought constantly to remind ourselves, and one another, that the worst feature of the older curriculum was not the subjects which were taught, but rather the way in which they were taught. To lay the emphasis on science teaching, however, will not produce a more highly educated or more intelligent youth unless we see to it that our methods of teaching do really produce the effects desired—the training of the faculty of observation, the stimulation of inquisitiveness, the power to experiment or put things to the test, and the power to co-ordinate and to reason from the results of experiment. It is not the inculcation of facts, but the training in scientific method that is of importance. Unless we recognise this, the revolt from a purely literary education has failed in its effect. Did not Prof. Armstrong, only a short time ago, ask the question: "Is school science worth having?" and answer it, "No, never! Well, hardly ever"?

I am quite aware that science teaching in schools has been advocated with much vigour on the ground of its utilitarian value, of the importance of science in the manufactures of the country; and from this point of view one may consider, with Spencer, that "science is the knowledge most worth." But I feel that the argument is a dangerous one for school education. A boy is not best fitted for the work and highest enjoyment of later life by being pushed along the groove in which the earning of his livelihood will keep him, but by having opened up for him a wide outlook on the world. In the period of school education, therefore, I would plead, and plead very strongly, against specialisation; and although in the later years, say from fifteen to eighteen, certain subjects will almost inevitably, in view of existing conditions, have to

predominate, I would urge that predominance should not involve exclusion—exclusion of the scientific side on the one hand or of the literary side on the other. I must confess that I sometimes feel that one of the best things a science teacher can do is not to insist too much on a large amount of time being given up to science subjects, but rather to promote the introduction of better methods of teaching literary subjects. If he is imbued with this spirit, his teaching of science, I am confident, will not be greatly defective.

Having now unburdened my conscience in some measure of a debt due to my own training by entering a plea for non-specialisation in schools, I pass on to consider more closely the scientific side of school teaching. What, we may ask, are or should be the chief aims of science education in schools? They are, I take it, chiefly these: to exercise and train the faculty of observation, to impart knowledge of important facts, to give a training in accuracy, and to train the mind to reason from facts observed.

Now, with regard to the first of these aims, I have some fear—I hope you will be able to assure me that my fear is groundless—I have some fear that official science teaching in schools is not doing all that it might in training the faculty of observation. From the very interesting and instructive report presented to the educational section of the British Association in 1908, it appears that in schools where the leaving age is sixteen, the science teaching in nearly all the schools from which replies to inquiries were received commences with elementary physical measurements at the age of twelve to thirteen, and is followed by physics and chemistry. That is to say, the study of science is confined almost entirely to experimental science. In a few schools only is there a course of nature-study, commencing at the age of ten to twelve years. I cannot but think that this is a grave error, not only as affecting the general education of the pupil, but also as affecting the later study of experimental subjects. I do not plead for nature-study in the somewhat restricted sense in which it is sometimes employed, and which has acquired some taint of disrepute, but I do plead for more training of the powers of observation, for which nature-study was introduced, and which, surely, was one of the chiefest pleas for the introduction of science into the curriculum of schools. I do not possess the experience in school teaching which most of you here have, but from what I have seen of work in schools and from the experience I have had of the later training of students of science, I feel sure that owing to the desire, the laudable desire, of science teachers to promote experimental work in the laboratory, there is a great danger of restricting within too narrow limits the observational power of the scholars. Through overestimating the value of weighing and measuring and quantitative experimental work, there seems to be a danger of underestimating the value of qualitative observational work. Experimental work in the laboratory is more suited to the later years of school life; but in the earlier years, say from nine to ten or twelve years of age, much can be done to encourage observation on the part of the scholar; and the natural inquisitiveness also of the child makes it not too difficult to impart to it useful information in science. Much, of course, will remain unintelligible to the young pupil, much will remain mysterious; but that I do not regard as any great evil.

I would urge, therefore, that before the study of experimental science is commenced there should come a few years of nature-study in the widest sense. For this no laboratory is required, and the material for study lies at hand all around in the fields, the rivers, the hills, in the sky, and in the streets of towns. All these may be used for exercising the powers of observation, and through them the scholar may be helped to learn, and will in most cases be interested in learning, many of the most important facts of botany and zoology, geology, astronomy, and mechanics.

While speaking of nature-study, I believe that at the present time, owing to the rapid growth of interest in scouting, teachers have a unique opportunity of encouraging the powers of observation of their scholars and of inculcating the great facts of natural phenomena and the laws of nature. Moreover, greater interest will be taken by the scholars in nature-study (in its widest sense) from the fact that it can be made a part of what they probably regard to a considerable extent as a recreation, and not merely a school task. In a few years these boy scouts should possess a rather enviable amount of knowledge of the vegetable and animal life of the fields, of physical geography, and of astronomy; and in them will easily be aroused the desire to draw maps and to understand maps, whereby the school teaching of geography will be facilitated.

It may perhaps appear as if too much time has been given up to general discussion of matters which do not seemingly come under the text of my remarks; but, personally, I feel that for success in the teaching of the scientific spirit in schools it is not so much profound knowledge of a particular subject that is required on the part of the teacher as a broad outlook on the different branches of knowledge, and on the part of the pupil an interest in knowing promoted by observation of what goes on around him.

Let me, however, pass on to consider more particularly certain questions concerning the teaching of experimental science. By this term, experimental science, we shall understand, as is now generally understood, practical measurements (measurements of length, area, and volume; determination of specific gravity, &c.), physics, and chemistry. With regard to these, I should like to restrict myself to the consideration of only one or two points which appear to me of most importance. The first general point which affects the whole of the teaching of experimental science is the *correlation of subjects.*

Much discussion has, I understand, taken place in recent years as to the relative merits of the "subject method" and the "problem method" in teaching, and I gather that the opinion of teachers is divided on the point. This is not to be wondered at; in fact, it is to be welcomed as a healthy sign of the existence of individuality among teachers. One teacher may be more successful with one method than with the other, partly, it may be, owing to his own particular abilities or sympathies, partly owing to the type of pupil he has to teach. It is a question for each teacher to decide, whether he can teach most successfully by the one or the other method, or by a combination of the two. But one fact should, I think, always be kept clearly before the mind of the pupil, viz., that all science is one and indivisible, and that the different "subjects" are not shut off from, but merge into one another. Although in the later years at school the course must almost certainly fall into separate subjects, during the early stages of experimental science study no separation of physics and chemistry should be made, and throughout all stages of study the pupil must be led to apply the knowledge gained in one class-room to the work done in another. I do not know to what extent this is attempted in schools, but certainly I know how difficult it is, in many cases, to secure it in universi-

ties. That is all the more reason for struggling against the watertight-compartment idea of subjects.

Now I know that this necessity for correlation of subjects is largely recognised, and in some cases the necessary correlation has been effected. But more can still be done, and more especially does this appear to be the case as regards mathematics and physics. The lack of correlation, certainly, is most unfortunate—unfortunate alike for the mathematical teaching and for the teaching of physics. By bringing mathematics into touch with experimental work, as, for example, by making the course of practical measurements a part of the teaching of mathematics, the latter would gain in vitality and interest, while progress in the study of physics would be promoted by the application of mathematics. It is a complaint of many science teachers, and certainly I can join in the complaint, that students of physics and chemistry are insufficiently equipped with a working knowledge of mathematics. But I greatly fear that we are all too much inclined to regard our own subject as *the* subject of importance; and there exists the great danger in schools of each subject being taught as if the boys were to become specialists in that particular branch of knowledge. The object of school teaching, however, should not be to turn out a classical scholar merely, or a mathematician, or physicist, or chemist merely, but to turn out a boy of wide interests and trained intelligence, although doubtless in some cases possessing special ability in one or other direction. The recognition of this aim, and the carrying of it into effect, will no doubt demand a certain amount of self-restraint on the part of the teacher who is specially keen on his subject; but it is worth while.

The correlation of subjects, also, should include the co-operation of the teachers. In his examination of the laboratory note-books the science teacher should not only be concerned with the scientific matter contained in them, but should also insist on correct spelling and good composition; and similarly teachers on the literary side might give scientific subjects as themes for essays.

Another point of general importance to which I should like to refer is the *use of books* in the teaching of experimental science. It will readily be granted that one of the greatest advances which has been made in recent years with regard to the teaching of such subjects as physics and chemistry has been the increased recognition of the value of experimental work carried out by the pupils in the laboratory. The older method, which consisted in learning the facts of these subjects from text-books, or even from lectures illustrated by a greater or smaller number of experiments, has, I fancy, entirely or almost entirely been superseded. The introduction of the heuristic method has completely altered the type of science teaching.

Now I believe that this is a subject on which every science teacher must earnestly question himself. Personally, I do not for a moment doubt the value of the heuristic method provided—and the proviso is an important one—provided the teacher is very capable, energetic, and sympathetic. There can be no doubt that the heuristic method makes enormously greater demands on the teacher; not, perhaps, so much on his knowledge of facts as on his general intelligence and the breadth of his outlook, his mental alertness, and his sympathy with his subject and his pupils. It is not every teacher who can guide successfully a pupil according to the heuristic method; and in the hands of many teachers the heuristic method may not only be no better, but may even be worse than the old text-book method.

But let us assume that we have a teacher, in any case, of average ability—and I do not think we have any right to ask for more—I should like to ask those who are actively engaged in teaching science in schools to tell me whether they are entirely convinced that in giving up the old method and adopting entirely the heuristic method we are not passing from one extreme to another. Indeed, it seems to me that this is the great danger in all progressive teaching—a danger, of course, not to be paralysed by, but certainly to be on one's guard against. It seems to me that whenever some too much neglected point in science teaching is emphasised, there is a tendency to magnify unduly its importance to the exclusion of all else, and there takes place a general scrapping of older methods without much attempt to save even what is good in them. The best teaching will be given, not by adopting one or other method exclusively, but by combining the good points of the different methods. The recognition of this fact will be promoted by the general expansion of the teacher's outlook which I advocated at the beginning of my remarks.

The special value of the heuristic method is that it keeps the scholar in contact with facts, and through his experiments he can best be trained to appreciate that all advance in science has ultimately its basis on facts. There is also undoubted value in the heuristic method in that, with proper guidance, the reasoning powers of the scholar can be strengthened. In the earlier stages I would advocate the predominance, at least, of the heuristic method. But in the later stages of study, when the minds of the pupils have become maturer, I feel certain that text-books should be introduced more and more. Progress by the purely heuristic method becomes too slow for the interested pupil, and he remains ignorant of many things which are really worth knowing. By the judicious use of text-books the pupil will be able to get a wider view of the subject, and will be better able to understand the lines of co-ordination running through the isolated facts. Moreover, an enormously valuable work will have been done by a teacher if he has succeeded in teaching a boy how to use a text-book.

But it is not only the careful use of specialised text-books that I should like to advocate; I would also urge that all pupils should be encouraged to read books of a general character connected with the subject they are studying. Such a practice should, indeed, commence even in the lowest classes where training in observation is being given. In this way the very valuable habit of reading may be encouraged, and in the later years, at least, much interest will be taken by the pupil in learning some of the details of the road by which he is advancing through the experimental work in the laboratory. Much of the detail work in the laboratory becomes, at times, even under the best conditions, somewhat uninteresting and irksome, and I know of nothing which is more likely to arouse and to maintain interest than that the pupil should obtain a general view of the ground he has passed over and of that towards which he is moving. How gladly does one, when laboriously ascending a hill, call a halt from time to time in order to look back on the progress he has made, to admire the surrounding scenery, and to recognise how, as the ascent proceeds, the view opens out in wider and more diversified beauty.

Another thing which I am sure it is most desirable to introduce into the fabric of school teaching of experimental science is the *general lecture*, dealing in a simple manner with some of the main achievements of science and sketching in broad outlines the paths along which the most notable experimenters and theorists have advanced.

In such general lectures, also, some idea of the history of the science would be given. By such lectures—they would, of course, not be altogether easy to give—the interest of the pupils would be aroused and their imagination would be stimulated. One need not in such lectures be afraid of advancing beyond the knowledge or complete understanding of the pupils; everything need not be explained, for no harm will be done by leaving some mysteries to arouse the curiosity of the pupils. One does not best inspire a love for flowers by always pulling them to bits.

Before leaving this section of the discussion I should like to say that, possibly owing to external pressure, possibly owing to the desire for more rapid progress, teachers are sometimes carried away by their own eagerness to assist the pupil, and fall into the mistake of making experimental work too easy. Apparatus is prepared and set up for the pupil, or such detailed instructions are given that the whole experiment becomes largely mechanical, and calls for but little initiative or thinking on the part of the scholar. Such consideration for the pupil is misplaced. It is of the highest importance that the pupil should be encouraged to suggest experiments to solve particular problems; and in putting together apparatus it is a most healthy thing to allow him occasionally to make mistakes. In this way the pupil soon learns to think of what he intends to do before starting to do it. It is no real kindness to the pupil for the teacher to do all the thinking for him. Moreover, the experimental work should be arranged so as to make a point understood in all its bearings. I have come across boys who knew quite well how to determine the density of mercury by the method of balancing a column of water, but who failed to see how it could be done if given a balance and a burette.

Another point in connection with which some modification of prevailing views is necessary is *accuracy in experimental work*.

It is one of the claims of experimental work that it gives a training in carefulness, in truthfulness, and in accuracy. Now I hope I shall not be held to minimise the value of such claims; these things are obviously of the highest importance in science. But there is, so far as my experience and observation go, an almost entire absence of any attempt to inculcate what is really the scientific meaning of accuracy, namely, the relative accuracy. In other words, the scientific value of a measurement does not really depend on its absolute error, but rather on the relative error or percentage error. Moreover, the pupil seldom if ever gets any clear idea of how to determine the experimental error of his measurements or understands how the experimental error in one series of determinations influences the result which is obtained by combining different series of measurements. As one of the consequences of this, he readily gains the idea that every measurement must be carried out with the greatest possible accuracy, and he further fails to understand, or in any case to put in practice, the knowledge that the accuracy of the numerical results depends solely on the accuracy of the experimental measurements and not on the number of decimal places to which the result is calculated. On going round the laboratory where students are occupied with gravimetric analyses, I have repeatedly found, in fact it is almost the general thing to find, that the results of analyses are expressed to three or four places of decimals, the number of decimal places used being almost always the same in the case of any one student, quite irrespective of the absolute magnitude of the result. Some students, indeed, with a most unscientific idea of accuracy, go one better and calculate the result to five places of decimals. They have no idea of the meaning of figures nor of the relation between the number of figures used to express the result and the errors of their experiments. All teachers, surely, must be familiar with this defect. This question of experimental error and of the number of figures used to express an experimental result is one of the highest importance, quite as important as training in accuracy of measurement itself. If one is to teach the scientific method, and that, surely, is the aim of science teaching, the inculcation of correct notions with regard to errors of measurement and the calculation and numerical expression of results requires much greater attention and emphasis than it seems to me to receive at present. To allow a boy to state a result which, if figures are to have any meaning at all, indicates that the result is correct to, say, one part in ten thousand, whereas, really, the error of experiment may be 1 per cent., is to allow the boy to tell a scientific untruth.

If the objection be made that such training belongs to a later period of study than that of the school, and is more suited for specialists than for the average schoolboy, I would only reply that I think there is no training more necessary for clear thinking or more useful for the general duties of citizenship. Had such training been given at school we should have less confusion and misuse of figures and statistics than recent controversies have exhibited.

So far my remarks have referred to the teaching of experimental science generally, and perhaps I can justify the title of my paper only by saying that the general principles which I have sought to lay before you should be applied with especial emphasis to the teaching of chemistry. In the case of chemistry there is, I believe, especial danger of getting away from the scientific method. The facts of chemistry are so numerous, and many of them are of so great importance in ordinary life, that the study of chemistry readily degenerates into a mere memorising of facts and a cataloguing of preparations and properties. As a consequence, it is to be feared that the pupil learns but little of the general scientific principles connecting and correlating the facts. Of course, if we assume that scholars who, on leaving school, do not go either to colleges or universities, are to take no further interest in science, or in chemistry in particular, then there is some reason certainly in supplying them with some of the most useful facts while they are at school. But do not let us deceive ourselves into thinking that we are giving the scholars a scientific education, or that we are training them in scientific method. It is important to remember, more especially in connection with the teaching of chemistry, that mere facts do not constitute science any more than a heap of stones constitutes a house; and although the facts are necessary in the one case, just as stones are necessary in the other, the important thing in science is the co-ordination of facts. One can no more claim to be teaching a pupil the scientific method by filling him full with facts than one would assert that the best training for an architect is to send him into a quarry to work stones.

Now in saying this I have, of course, exaggerated the picture somewhat; at least I hope I have. I suppose that even in the worst cases some attempt is made to give a training in the general principles of chemistry; still, I believe that in the teaching of chemistry the worst defect is that a knowledge of facts is too greatly insisted on, and that insufficient attention is given to the teaching of

general principles. Recent years have seen the rise and enormous development of physical chemistry, which has exercised a most important influence on the whole aspect of chemistry and on the mental outlook of the chemist; and this must be recognised in the teaching of chemistry in schools. Not that I advocate for one moment the teaching of physical chemistry as a separate subject; but the whole method of teaching should be imbued with the spirit of physical chemistry. For it must be remembered that it is by the introduction of the principles of physical chemistry that chemistry ceases to be a descriptive subject and becomes a rational science. It is with the spirit of seeking out the general principles underlying facts that it is necessary to imbue the mind of the boy who is studying chemistry; and if this is honestly done the teaching of chemistry will cease to draw upon itself the sneer of following the methods of the cookery class, and will become, what I believe it to be, the most valuable branch of study for the inculcation of the scientific method and for the training of the observational and reasoning powers. The method undoubtedly demands a wider knowledge and greater intelligence, and perhaps a more philosophic bent of mind on the part of the teacher, as well as a larger amount of thinking on the part of the pupil, but these will not, I hope, be urged as objections to, but rather as advantages of, such teaching

I am quite aware that in emphasising the more philosophic treatment of chemistry I run the risk of being condemned as a despiser of facts and of advocating vague theorising. But nothing is further from my mind than to consider facts, and the acquisition of facts, of little value. I merely ask that the teaching of chemistry shall not run to one extreme and neglect what is, at least, a very important part of scientific chemical education. Anyone who would learn how the teaching of chemistry which I advocate here differs from the chemistry as formerly taught, and as still taught to a considerable extent, has only to compare one of the older text-books with those by Alexander Smith or by Ostwald.

Lastly, there is just one subject to which I would make brief reference—the subject of examinations. In the British Association report of 1908 I read: "The curse of science work is examinations, especially the compelling of boys to pass in elementary science. Nothing is more deadening than the getting up of chemistry for London matriculation. When the experiments have been made and understood, all educational value has been sucked from them; the boys are capable of doing higher work, but they must grind along the weary round of describing elementary experiments, of learning to recognise that the same question may be asked in ten different ways, and of devising laborious experiments to prove something which is perfectly obvious." I agree. If the teaching of science is to be infused with any vitality, the teacher must be encouraged to develop his individuality, and that is possible only if he is allowed to develop his methods of teaching according to his own ideals and to suit the particular conditions of the school. To work according to the syllabus of an external authority and in disregard of local conditions and necessities is one of the surest means of killing whatever life may lie in the teaching. The whole system and method of examinations require to be altered; and I am sure you will agree with me that an eminently wise step has been taken by the University of Birmingham in instituting its school certificates, which are awarded on the results of examinations conducted separately for each school according to the syllabus drawn up by the teacher and approved by the University. Recently, also, experiments have been made in obtaining the co-operation of the teachers themselves by getting them to award to each candidate a general impression mark for the work done during the previous session, and this mark is taken into account along with that obtained on the examination paper. This method promises to be very successful. It not only stimulates attention and care on the part of the scholar, but it also recognises the individuality and status of the teacher.

HISTORY AND CURRENT EVENTS.

THE Postmaster-General has been asking owners of flats to allow the deliverers of letters to use their lifts, and when refused has in turn refused to have the letters delivered except to the porter. The incident reminds us of what happened in Cambridge some twenty-five years ago, an affair which illustrates the working of a Government monopoly. At that time the college porters used to fetch all the letters for their respective colleges from the central post-office, and thus saved the postmen much of their work. The colleges also had a private system of letter delivery, some colleges taking letters for their residents free to certain parts of the town, some charging a halfpenny fee. The Postmaster-General discovered this "breach of his monopoly" and suppressed it. The colleges, finding the law was against them, retorted by refusing to fetch their letters as heretofore, and now the postmen have to ascend all the staircases in the colleges (they have no lifts) and deliver each man's letters at his "oak." We leave our readers to draw their own deductions.

"DURING the renovation of the cathedral at Aix-la-Chapelle, workmen have discovered the coffin containing the remains of the Holy Roman Emperor Otto III. (980–1002)." In how many ways does this paragraph jar on the nerves of one who wishes history to be as pedantically correct in its terminology as any of the "sciences"? Where and what is "Aix-la-Chapelle"? Its name looks like that of a French town; but it is German, and has always been German except for the brief period of French power under the Corsican Emperor. Why, therefore, not call it by the German corruption of the Latin "Aquae" rather than by the French version thereof. We have less objection to "Otto" (though, as a German, he was of course Otho) because, being as lawfully king in Italy as he was in Germany, it may be allowable to call him by the Italian form of his name. But was he *Holy* Roman Emperor? Were any emperors ever called "holy"? We think not. The empire was "holy," but not the emperor—certainly not in Otho's time. Was he emperor in 980? His father died in 983, when he was three years old. Then he became "rex Germanorum"; but it was not until 996 that he was crowned by the Bishop of Rome and became, as he called himself, "Otto tercius Servus Jesu Christi et Romanorum imperator Augustus."

IT is a commonplace to contrast Great-Britain-and-Ireland and its unwritten constitution with our cousins of the United States of America and with other countries that have written constitutions. And we trust that our readers also know that, whereas it used to be said that written constitutions are unchangeable, while the Brito-Irish, if it exists at all, is in a perpetual state of flux, it is now orthodox theory that written constitutions are liable to change without formal modification, though not so easily as unwritten ones. If so, we need do no more than point to the constitutional struggle that is apparently

beginning in the North American Republic. Party government, and the machinery of party, has grown there, as it grew in Great Britain in the seventeenth and eighteenth centuries with *its* development of the Cabinet. Though both institutions, the Caucus and the Cabinet, are unknown to the law, they must be taken into account by one who would expound the working of the constitutions of these two countries. And it is a constitutional agitation which Mr. Roosevelt is inaugurating when he attacks the Caucus, though there will be no need further to amend *the* constitution.

MANY are the ignorances of those who imagine that the Bible was unknown to the common people in the Middle Ages. True, that owing to the difficulty and expense of multiplication, copies of the whole of the Hebrew and early Christian writings were scarce; but in many ways those parts which are most helpful spiritually were accessible to most, and there was one method of presenting Bible stories which was accessible to all. We refer, naturally, to the pictured walls and windows of mediæval churches. It was not perhaps satisfactory in the judgment of modern historical criticism, but probably quite as instructive as much that passes for such in our modern Sunday schools, and there was loss as well as gain in Protestant iconoclasm. We have been set thinking thus by an account of a new addition to the wealth of London. Mr. Frederic Shields has just completed, after many years' work, the Chapel of the Ascension, a place of quiet retreat in which he has set forth, in artistic wise, his message as a prophet to this generation. Not for the sake of art, though the art is there in wonderful measure, but for the sake of the Gospel, like the mediæval church builders and decorators, he has erected his monument to the glory of God.

ITEMS OF INTEREST.

GENERAL.

IN a letter, dated November 8th, to the Vice-Chancellor of the University of Cambridge, Sir Harold Harmsworth states the conditions of his offer of £20,000 for the endowment in the University of a professorship to be called the King Edward VII. Professorship of English Literature. He asks that it shall be the duty of the professor to deliver courses on English literature from the age of Chaucer onwards, and otherwise to promote, so far as may be in his power, the study in the University of the subject of English literature. The subject is to be treated on literary and critical rather than on philological and linguistic lines. Sir Harold Harmsworth desires that any British subject or American citizen named by the Crown may be appointed to the chair.

THE Society of Schoolmasters, of 40, Denison House, 296, Vauxhall Bridge Road, London, has received a welcome addition to its funds in a donation of £100 from the committee of the Headmasters' Conference, the second donation which that body has generously sent to the society.

THE sixth annual meeting of the Association of Teachers in Technical Institutions was held at the Northern Polytechnic, Holloway, London, on November 5th. The annual report of the council was presented, and showed that there had been a growth in the strength of the association during the year, together with expansion in its work and influence. It is suggested that the publication of the evidence already given before the Royal Commission on London University has made it evident that efforts are being made in certain quarters to limit the scope and activities of the London polytechnics. The council reported that evidence is being prepared which it is proposed to submit to the commission on behalf of the association. Pleasure was expressed at the fact that the Board of Education recently announced its intention of issuing at an early date regulations making provision for a number of reforms repeatedly urged by the association. The president of the association, Mr. J. Wilson, in moving the adoption of the report, said that the association has steadily kept before the public the necessity for such fundamental reforms as: (i) elementary-school education to be more practical or constructive and less "bookish"; (ii) compulsory attendance at day or evening continuation schools, with a limitation of the hours of labour of adolescents; (iii) the institution of technical secondary schools, including specialised trade schools; (iv) the linking up of the elementary schools through the continuation and secondary school to the technical school; (v) increased provision of scholarships with maintenance grants, so that the qualified day or evening student, however limited his means, may receive the highest possible technical training the community can supply. The adoption of these reforms would speedily react upon the well-being of the great national industries and arts and crafts, and would give an impetus to technical education in all its varied branches. Mr. Barker North, of the Bradford Technical College, was appointed president for 1911.

THE Education Committee of the London County Council has decided to increase the number of senior county scholarships in 1912. The number of senior scholarships competed for is at present fifty; in 1912 it is to be a hundred. In the same way as it was necessary to increase the number of intermediate scholarships this year when the first batch of junior scholars reached the age of sixteen, so it will be necessary to increase the number of senior scholarships in 1912 when the same pupils become eighteen years of age. The annual cost of the hundred senior scholarships is estimated at £20,000. In awarding senior scholarships, the Education Committee considers the past achievements of candidates and the reports of the teachers under whom they have worked. Such reports must have reference to the character and qualifications of the candidates, as well as their scholastic attainments. The scholarships carry with them a maintenance grant of £90 a year as a rule, but the precise amount is decided upon after a consideration of the financial circumstances of the candidates.

THE last report of the Royal Society of Arts shows that its examinations are as popular as ever. The increase in numbers, which has been continuous since the year 1883, is still maintained, and the increase for the present year is more than 1,200 candidates. The most striking feature is the large increase in the number of elementary candidates. The figures this year show an increase of 10 per cent. over last year's. The growth of this stage has been steady and rapid since it was first started in 1901. This may be taken to be proof of the improvement in the character of the education given in the continuation schools of the country, especially in those of the London County Council, from which a very large proportion of the entries for the elementary stage is drawn. In the results of the two higher stages there is less evidence of progress, and the quality of the papers shows little if any improvement. The examinations this year were held at 438 centres. The total number of candidates at the examinations was 26,283: advanced, 4,654; intermediate, 11,340; elementary,

10,289. In the advanced stage there was a falling off of 153; in the intermediate, an increase of 264; in the elementary, an increase of 1,093.

THE International Exchange Society, of Boulevard Magenta 36, Paris, arranged during the last summer holidays the exchange of 400 pupils from France to England or Germany, and from England to France or Germany, and *vice versa*. This society is supported by the French Government, and is willing to give full particulars about suitable families in France which are anxious to send one of their children for several months to stay with an English family of similar social position, and to entertain in exchange an English boy or girl from the home into which their own child is received.

THE Selborne Society has arranged a very attractive series of lectures in London for the present session which should appeal in a special way to teachers of nature-study. The lectures are held in the theatre of the Civil Service Commission, Burlington Gardens, London, W., on Mondays at 6.30 p.m. Full particulars as to membership of the society can be obtained from the honorary secretary, Mr. Wilfred Mark Webb, at the offices of the society, 42, Bloomsbury Square, London, W.C. The objects of the society are: to promote the study of natural history; to preserve from needless destruction such wild animals and plants as are harmless, beautiful, or rare; to discourage the wearing and use for ornament of (i) the skins and furs of such animals as are in danger of being exterminated, and (ii) the skins and plumage of such birds as are not domesticated; to protect places and objects of natural beauty or antiquarian interest from ill-treatment or destruction; and to afford facilities for combined effort in promoting any of the above or kindred objects.

THE importance of ensuring that the education given to boys and girls during their school life is an education of the kind which will best fit them to perform the duties of later life is being more and more appreciated. Mr. Runciman recently opened a "Home-making School" at Dewsbury, and in his address dealt with the education of girls in the domestic arts. He said that when he came into office there were in connection with the Board of Education something like 1,480 classes in cookery in England and Wales; now there are well over 2,000. The number of laundry centres has increased from 400 to 550, and in the combined domestic subjects, covering cookery, laundry-work, and housekeeping, there has been an increase from 83 to nearly 150. But, as Mr. Runciman said, these figures are very small in proportion to the needs of England and Wales. Continuing, the President of the Board of Education said it is quite clear that there ought to be a close and intimate connection with the homes from which the children spring and with the work done in the elementary schools. It is absolutely necessary that the work should have reference to the teaching of personal hygiene and to the great subject of infant care, to which more attention should be paid in the upper classes of elementary schools. Twelve years of age is soon enough to commence. The work done must of necessity be work in practical demonstration, which will be of infinite value. Girls ought not to be taught a mere hotch-potch of practical knowledge, but the teaching should be regarded as an applied science.

To mark the importance of the ceremonies in connection with the Union of South Africa, the *Times* published on November 5th a supplement of forty-eight pages dealing with South Africa. This publication is of special importance to the teacher, as it provides, within the compass of one document, information on British South Africa supplied by writers who live and work in South Africa and can write authoritatively. There is, further, information which is not readily obtainable from other sources. The first page is a signed map of South Africa compiled in the office of the Surveyor-General in Pretoria; this summarises the main features of the geography of the country, except the relief. Agricultural, animal, and mineral produce; railways, telegraphs, ports, towns, are all shown. Articles are included on climate, history, the agriculture of the provinces of the Cape of Good Hope, Natal, Transvaal, Orange Free State, railways, harbours, gold, diamonds, coal, &c., and all are well illustrated. If the gold output of the world in 1889 be taken as 100, the Transvaal contributed 6 parts of this; in 1899 the world's output had increased to 164, of which 34 came from the Transvaal, while in 1909 the total output was 368, of which one-third came from the Transvaal. Putting the facts in another way, the Transvaal produced more gold in 1909 than was produced by the whole world in any single year prior to 1893. Special accounts are provided of the diamond-mining industry, the cities of Pretoria, Johannesburg, the coming of age of Rhodesia, education in South Africa, &c., and there are separate maps of the four provinces and Rhodesia. This supplement deserves to be placed in the library of every school both for its own merits and as an historical document.

THE first issue of the *Journal of the Bedales School Scientific Society* is worth more than a brief notice. It represents an attempt to use the inspiration of original inquiry to guide the voluntary work of a school laboratory. The society is obviously in debt to the school staff, particularly to Dr. Hodson and Mr. T. J. Garstang. Former pupils have sent researches done in laboratories elsewhere. Among the ordinary members, the pupils of the school, are several surnames well known in the scientific world. The topics treated include the separation of the cerium group, a theory of coherer action, the hysteresis of rubber, the electrical properties of molybdenite and liquid crystals. Judging from this pamphlet we may certainly rejoice at the very high standard which the society has set before itself, and hope that it may be maintained in some future report containing biological papers.

THE article on wheat-growing and its present-day problems, by Dr. E. J. Russell, in the current number of *Science Progress* gives an admirable summary of the present position of our knowledge of the subject, and affords material which should be of value to teachers of geography. Opportunity was taken at the meeting of the British Association in Winnipeg to organise a discussion on wheat, to which most of the leading experts in the subject made written contributions. These have been published as a supplement to the *Journal of the Board of Agriculture*. The schoolmaster will perhaps find most interest in the sections dealing with the history of the wheats, the conditions regulating growth, and the economic problem.

THE November issue of *School Science and Mathematics* (Chicago) contains the report of the Central Association of Science and Mathematics Teachers on "Real Applied Problems in Algebra and Geometry." The committee appointed has undertaken to investigate to what extent the teaching of algebra and geometry may be reformed by using real problems derived from practical sources, and it has used as a basis the problems of this type

which have appeared in each number of the magazine during the past year. Articles deserving careful attention are continued from the preceding number on "The Teaching of the Shape, Rotation, and Revolution of the Earth in their effects upon Climate and Life," and on "The Use of Qualitative Tests of Foods in Teaching General Chemistry." Chemists will be interested in a contribution on "The Value of Chemistry as a High-school Subject."

SCOTTISH.

MR. ASQUITH, Lord Rector of Aberdeen University, delivered his rectorial address in the hall of Marischal College. After sketching the growth of organised education in western Europe, he proceeded to consider the shortcomings and drawbacks which at the present day threatened the pursuit of the higher learning. And first he warned his youthful hearers against the dangers of *specialism*. The enormous range of the field of knowledge makes some form of specialism inevitable, but the universities should see that this concentration of effort is not attained at the sacrifice of width of view and catholicity of interest. There is much to be said for the old university ideal of the "all-round" man—not the superficial smatterer who knows something about everything and much about nothing, but one who has not sacrificed to a single dominating interest his breadth of outlook and the zest and range of his intellectual curiosity. The second *idolon* of the academy is diffuseness in the written and spoken word. As a corrective, Mr. Asquith counselled his hearers to go to the great masters of English prose, Sir Thomas Browne, Gibbon, De Quincey, Stevenson, and the like, in order to study the secret of their music and to master the processes by which they forge their phrases, sentences, and paragraphs, and give to each its proper place and function in an immortal work. Besides teaching its students to eschew narrowness in the range of their intellectual interests and slovenliness in writing and speech, a university should put them on guard against the dogmatic temper. To be open-minded, to struggle against preconceptions and hold them in subjection, to welcome new truths when they have proved their title, to keep the scales of judgment always fair and even are among the rarest of qualities, and a university which cultivates those gifts among its alumni, although it does nothing else, will justify its place in the national economy. Altogether, the address was one well worthy of the man and the occasion, and by general agreement is regarded as the ablest rectorial address for many years.

THROUGHOUT the proceedings the conduct of the students was marked by the usual rowdyism characteristic of university life the world over. During the address interruptions were frequent, but on the whole good-natured. The appearance on the scene of a group of "suffragettes" with banners and trumpets effectually stopped the proceedings for a time, until the interrupters were forcibly ejected. It was learned later that the genuine "suffragettes" were guiltless in the matter, the offenders being male students masquerading in female attire. Allowance must be made for those "children of a larger growth," and practical jokes such as the above will always "be great to little minds." But no exuberance of youthful spirits can be accepted as an excuse for the excesses that marked the conduct of the students after the address. It had been arranged that at the close of the meeting the Lord Rector should be drawn by the students in a carriage to the residence of the principal, but before he emerged from the hall the carriage had been practically smashed to fragments, and the remains carried off in triumph by the student vandals. Such conduct can only be regarded as inexcusable "hooliganism" in high places.

THE half-yearly meeting of the General Council of Aberdeen University was largely occupied with the question of the preliminary examination. Two opposing parties were in evidence throughout the discussion—one section protesting that salvation for the university was only to be had by making Latin compulsory in the preliminary examination, and the other advocating the policy of the open door. In the end compulsory Latin carried the day. Mr. D. M. Milligan presented an interesting report from the Business Committee showing the curricula followed by the students during the past session. Apparently Aberdeen University, like the American universities, is suffering from "a debauch of options." There were 300 odd students in the arts faculty, and separate courses were taken by more than 200 of them. An analysis of these different courses brought out some remarkable facts. Seven courses included no language, 55 had no philosophical subjects, and 90 had no science. On the other hand, 23 approved arts curricula included 4 sciences, 13 included 5 sciences, and 3 included 6 sciences. From these returns it is clear that the policy of unrestricted options has utterly broken down. Unless immediate steps are taken to bring order out of the present chaos the Scottish M.A. degree will become discredited as a guarantee of general culture.

THE annual general meeting of the Secondary Education Association was held in Glasgow University. Mr. John Alison, Edinburgh, presided over a large and representative attendance. The secretary's report showed that the association embraced within its ranks the greater number of the secondary-school teachers of Scotland. During the year the council of the association had under consideration the question of co-operation or federation with associations interested in special subjects, such as the Classical Association, the Modern Language Association, and the English Association. The secretary now reported that the Modern Language and the English Associations had agreed to a scheme of co-operation in regard to the holding of occasional joint meetings, and the determining of the subjects and dates of meetings. The president in his retiring address dealt with some of the most pressing educational questions of the day in a singularly thoughtful, incisive, and detached fashion. While handsomely acknowledging the open-mindedness and reasonableness of the officers of the Scotch Education Department, he sharply criticised their policy in regard to the award of bursaries for secondary education. All these were now determined on eleemosynary principles. In their dread of unhealthy competition they had entirely overlooked a competition that was healthy, stimulating, and almost essential for all genuine effort. He also commented adversely on the Departmental policy of subsidising the teaching profession. It was argued that it was necessary to do so in order to secure an adequate supply of teachers, as it would be prejudicial to the interests of the State if the supply failed. But he pointed out that it would also be against the interests of the State to have too few doctors. Yet the State did not ask a department to offer inducements for the proper number of youths to undergo medical training. All that the State should do was to provide the machinery for training members of the teaching profession, just as it did for other professions, and leave the rest to the ordinary laws of supply and demand.

THE annual meeting of the Scottish Branch of the English Association was held this year in Marischal College, Aberdeen. Prof. Grierson presided over an excellent attendance. The treasurer's report showed a balance of £10 10s. 10d. in favour of the association. Dr. A. E. Scougal, inspector of training colleges, was elected president, and Sir Donald MacAlister vice-president. The main part of the forenoon session was devoted to a lecture on "The Norse Language in Orkney and Shetland," by Dr. Jakob Jakobson, of Copenhagen University. In the afternoon Prof. J. Arthur Thomson gave a lecture on "The Dryad in the Tree." The aim of the paper was to emphasise the part that nature played in developing men of feeling and emotion. Without schooling in the humanities men would never have made so much of nature, while on the other hand schooling in nature had tended greatly to deepen the finer and more humane feelings.

EDINBURGH UNIVERSITY COURT has adopted the following regulations for the bursary examinations in the arts faculty: (i) The subjects of examinations shall be Latin, Greek, mathematics, French, German, English, history and geography, Italian, Spanish, Celtic. (ii) The full marks for each subject shall be 100. (iii) Every candidate may take up four different subjects, but must select at least two from the following list of four alternatives: Latin, Greek, mathematics, French and German. (iv) The papers for each subject shall be on the higher standard of the preliminary examination in arts, together with an additional paper.

CONGRATULATIONS are due to the editor of the *Educational News* on the issue of the special "associations number" of October 21st. Here every educational association in Scotland, whether of managers or teachers, has its history, aims, and achievement told by an official or member who knows at first hand what he is talking about. Although there are eighty-three pages of printed matter no addition has been made to the ordinary price of the periodical—one penny. A copy of this unique number has been sent to every School Board member, to every school, and to every teacher in Scotland. Under its present editor the *News* has become one of the most up-to-date of educational weeklies, and the enterprise of the management on the present occasion merits special commendation.

IRISH.

THE Catholic Headmasters' Association has published the report of the meeting which it held this autumn. The financial needs of intermediate education claimed its first consideration, and it was determined to press the demands already made. It further unanimously passed a resolution supporting the desire of the assistant-masters to raise their status and improve and secure, so far as may be, their financial position in the matter of salaries and pensions. It was agreed that the retention of the group system as the basis of the award of exhibitions promotes a tendency to specialisation at too early an age, and that it would be desirable to abolish the system altogether and assign marks to each subject in proportion to its difficulty, a maximum being fixed which might be less in the middle than in the junior, and less in the senior than in the middle grade. Arising out of the consideration of a recent speech of Sir Samuel Dill, it was resolved that the association was of opinion that the abolition of the system of general examinations at the present time would be premature, as the value of inspection is yet an unknown quantity. The association also protested once more against Rule 12 (*b*), 1910, asked for the restoration of the principle of averages, for the abolition of the division of the literary group into two sections, and for the prescribing of certain definite texts for pass in the middle and senior grades, and directed the attention of the Intermediate Board to the percentage of failures this year as larger than on any previous occasion.

A PUBLIC meeting was held in the Mansion House, Dublin, on November 5th, to discuss the present position of intermediate education. It was promoted by the Association of Secondary-school Teachers, and was one of the most important meetings ever held in Ireland in connection with secondary education. It was supported by all classes of teachers, the two Dublin universities, both political parties, and by both Roman Catholics and Protestants. The chair was taken by the acting Lord Mayor. The first resolution, proposed by the Rev. P. Cullen, C.M., president of St. Vincent's College, Castleknock, and supported by Mr. J. J. Clancy, M.P., and Mr. Wm. Field, M.P., was: "That intermediate education has for several years suffered from a most unfair discrimination as compared with intermediate education in Great Britain; that the provision made for Irish intermediate education—at the best insufficient and unfair—has recently diminished to a disastrous degree, while the needs of education have substantially increased; and we therefore call upon the Government to make adequate provision for intermediate education in Ireland and to place the grant for the purpose on the yearly estimates, so that it may be possible in future to discuss this most important subject in the House of Commons."

THE second resolution, proposed by Prof. Culverwell, professor of education in Dublin University, seconded by the Rev. T. Corcoran, S.J., professor of education in University College, Dublin, and supported by Dr. Coffey, president of University College, Dublin, Mr. John Dillon, M.P., and Mr. T. O'Donnell, M.P., was: "That the efficiency of the teachers must always be the main factor in the success of every system of education; that the present position of teachers in the secondary schools in Ireland is most unsatisfactory, and we are strongly of opinion that a regular profession of secondary-school teachers, with adequate salaries and pensions, should be immediately established in Ireland, and that this should be made an integral part of any new arrangements for Irish intermediate education." The third resolution was proposed by Mr. R. M. Jones, headmaster of the Royal Academical Institution, Belfast, and seconded by Mr. P. Kennedy, chairman of the Secondary-school Teachers' Association: "That we appeal to all Irish Members of Parliament to support the demands set forth in these resolutions, and that copies of these resolutions be sent to the Irish Members, to the Prime Minister, the Chancellor of the Exchequer, and the Chief Secretary.

MR. JOHN DILLON, M.P., divided the requirements of intermediate education into three: (i) adequate financial grants from the Exchequer; (ii) the establishment of a proper teaching profession; and (iii) the creation of a system of scholarships whereby pupils of the National Schools might ascend to the University.

ON this last subject Mr. Birrell had earlier received a deputation from the General Council of County Councils urging the establishment of scholarships to bridge the gulf between primary and secondary education, and in reply he stated that provision might be made in one of two ways, either by the funds at the disposal of the Intermediate Board or by the council of any county or county borough in Ireland. As to the second way, he had no

control over the county councils. As to the first, the Intermediate Board had in his opinion a claim for more funds, and the only question was how far Parliament would be disposed to make a grant. The intermediate funds were purely local funds, not imperial; they had broken down to a certain extent, and a further grant would have to be made. Whether it would be made expressly for scholarships was another question.

THE Department of Agriculture and Technical Instruction announces that a limited number of scholarships and teacherships in training, tenable at the Royal College of Science, Dublin, will again be offered for competition in June of 1911. All applications for particulars must be made before April 29th next to the secretary of the Department.

WELSH.

CONTROVERSY is settling steadily upon the report of the Welsh Department of the Board of Education. The County Schools Association of Heads of Schools at a meeting held at Shrewsbury passed the following resolution: "That this association of the headmasters and headmistresses of Welsh intermediate schools protests against the Report of the Board of Education on Intermediate Schools in Wales for the year 1909 as unfair and directly contrary to the tenor of the reports of the examiners of the Central Welsh Board on which it claims to be based; and as the report gives a distorted and misleading view of the state of intermediate education in Wales, the association calls upon the Board of Education to withdraw it." The resolution was carried unanimously, and members of the association were asked to approach the Welsh Members of Parliament to have the matter fought out in the House of Commons.

THE president of the association (Mr. Edgar Jones, of Barry County School) made a vigorous defence of the schools, and rebutted the charge that the schools produced pupils of "a wooden and unintelligent type of mind." Mr. Jones pointed out that the schools were established fifteen years ago, and that the first-fruits of the work of the schools could hardly be looked for in university lists until seven or eight years ago. During this period at least 656 pupils of sixty-four schools had graduated in various universities, 103 with first-class honours, 228 with second-class honours. More than 90 had graduated in the older Universities of Oxford and Cambridge. During the last five years 72 had taken first-class honours in the University of Wales. In 1900 the percentage of these old county-school pupils in first-class honours was 72·4 of the whole list. Of these, four gained double firsts and eight a second class as well as a first. Twenty years ago the scholarships of the various University Colleges of Wales were captured by pupils from English schools. Of late years they had practically all been taken by pupils from the Welsh county schools. At least 537 scholarships had been gained by county-school pupils during the last ten years at various universities, and of these at least 48 were at Cambridge or Oxford.

THE Bishop of St. Asaph, on the other hand, in his recent triennial visitation at Wrexham, seems to accept the report of the Board of Education as an accurate statement of the condition of the schools. He says: "The milestones the teacher and pupil are monotonously compelled to pass are represented by the Central Welsh Board's syllabus, the C.W.B.'s inspection, the C.W.B.'s examination, the C.W.B.'s certificate, and there is neither opportunity, nor space, nor freedom for initiative or independence of action given to the head teachers. The same mechanical tendency is evidenced by the wearisome and complicated forms upon the filling up of which the head teachers waste much valuable time." The deduction the Bishop draws is that the time has come for a searching investigation into the working of the Welsh secondary educational system.

THE Welsh county schools' headmasters and headmistresses have decided to organise a fund for a Welsh national memorial to King Edward VII. They propose to raise at least £1,000, which represents, on an average, a little more than £10 for each of the ninety-six county schools. The object, of course, is to associate the schools with the national life, and to bring before the children the importance of civic interests.

CARDIGANSHIRE EDUCATION COMMITTEE is again delaying the act of justice to the head teachers of the non-provided schools in paying them at a lower rate than the council school head teachers. Now the ground of excuse is to obtain a return "showing the time devoted to religious instruction and its nature." One member, a Nonconformist, urged that in the past Nonconformists complained of the disabilities attaching to them; "but now," continued the speaker, "they appeared to attach disabilities to the teachers because they happened to be in non-provided schools. To be consistent they should remove that stigma. If inferior they ought not to be teachers; but if on a par with the other teachers they should be paid at the same rate." All in vain. After an expression of sympathy with the teachers they again *postponed* the question.

RECENT EDUCATIONAL THEORY.

(1) *A First Book in Psychology.* By Prof. Mary Whiton Calkins. xvi+419 pp. (New York: The Macmillan Company.) 8*s.* net.

(2) *Introductory Educational Psychology.* By S. B. Sinclair and F. Tracy. xii+180 pp. (Toronto: The Macmillan Company of Canada.) 4*s.* net.

(3) *Handwork as an Educational Medium and other Essays.* By P. B. Ballard. x+194 pp. (Swan Sonnenschein.) 2*s.* 6*d.* net.

(4) *Attention and Interest: a Study in Psychology and Education.* By Felix Arnold. viii+263 pp. (New York: The Macmillan Company.) 4*s.* 6*d.* net.

(5) *Philosophie de l'Education, Essai de Pédagogie Générale.* Par E. Rœhrich. 288 pp. (Paris: Alcan.) 5 francs.

(6) *Esquisse d'une Science Pédagogique; les Faits et les Lois de l'Éducation.* Par L. Cellérier. xiii+393 pp. (Paris: Alcan.) 7.50 francs.

(7) *An Outline of Logic.* By Prof. B. H. Bode. x+324 pp. (Bell.) 4*s.* 6*d.*

ELEMENTARY books on psychology which are at once readable and accurate are not numerous, and the amateur reader is tempted to the conclusion that the subject treats of things which everybody knows in language which few can understand. There is, of course, always the case of the late Prof. James to prove that psychology can be made interesting, and now we have Miss Calkins attempting the difficult task. Her previous work had already established her reputation as a sound thinker, and this "first book" will be welcomed by all who know the worth of her previous performances. Its style is admirably clear, and every point is illustrated in a fresh, attractive, and convincing way. The critical reader will not always agree

with the writer, who is often necessarily dogmatic. She says, for example, that "the term 'interest' is best used as synonym for involuntary attention," and with this the topic is virtually dismissed. But dogmatism is essential in an elementary book, and Miss Calkins has given ample references for further reading in her appendices to the various chapters. We know no better book for those who are seriously entering upon the study.

It is with less satisfaction that we have read the "Introduction to Educational Psychology" which Dr. Sinclair and Dr. Tracy have recently given us. It is not written as a self-sufficient text-book, but as an accessory to class-room work. Instead of connected accounts of the various topics, the writers give a series of questions or simple experiments which will guide the student's psychological observation. These questions are not always very simple. "If a pupil is not allowed to play in early childhood, how will this affect his later life?" Who shall say? "If manual training be neglected during the nascent period of the motor centres, can the highest skill be afterwards attained?" What of Praxiteles, Michael Angelo, and some others? "If the little child had no natural aptitude to activity, would he ever learn to walk?" Would he ever learn anything? The book represents an excellent idea, but it would gain greatly by rigorous revision of the questions which are suggested. Loose thinking is so commonly present in the written work of students in training, that it is worth while making an effort to avoid the appearance of it in their text-books.

Mr. Ballard's essays on the educational importance of handwork were well worth preserving in a more permanent form. The hand is slowly coming to its own in our schools; we are just beginning to believe in it as a prime source of clear ideas, and the case for active reform in this direction cannot be too strongly or too frequently put. Incidentally, the author has a tilt at formal grammar, and gives many amusing examples of childish muddle-headedness when tackling simple grammatical questions. But many of these mistakes spring from bad teaching. A good teacher can make formal grammar both possible and interesting to an ordinary class; and should not the question rather be, is it worth while? A twelve-year-old boy may acquire a class-room zeal for parsing, but he would commonly prefer to be whittling at something or other with a knife. Would this be a better use of his time?

The motor side of school activity is similarly emphasised in Dr. Arnold's book, "Attention and Interest." As a book for teachers, it is a much less readable statement of the claim than that just noticed, but it is an altogether more ambitious attempt to present the results of modern psychological research so far as they bear on these central problems, and those teachers who are equipped with the fundamentals of the subject will not be terrified by the somewhat technical and unliterary style which the author has adopted. The last two chapters, which deal with attention and interest in the class-room, contain much that is familiar to every experienced teacher; nevertheless, the tritest of practical directions gains enormously from the theoretical considerations which justify it in what may well be a novel way.

Two recent French books on the educational theory should be noticed in this connection. In his "Philosophy of Education," M. Rœhrich has followed very closely the customary method of the Herbartians. He deals with such questions as the possibility of education, the meaning and importance of individuality, with the *rôle* of instruction in education, with the educative values of the various subjects of the school curriculum, and finally with moral education. The strong Herbartian interest of the writer is manifest throughout the book, which takes little or no account of modern psychological research. M. Cellérier has, on the other hand, approached his subject in much more active sympathy with the scientific method. His analysis of the factors in education—the subject to be educated, the environment, and the active educational agencies at work—is clear and well worked out so far as it goes, and his treatment of the process of education is equally attractive. The work is, however, little more than a sketch, but it presents fundamental notions very effectively. Without being oppressively learned in his style, the author has obviously read current psychology and philosophy; he knows the trend of biological and sociological thought. His book is consequently interesting from cover to cover. It has the additional advantage, not shared by all French books, of being well printed on good paper.

A welcome should be accorded to Prof. Bode's "Outline of Logic." The author has rightly given less than the usual space to the more formal aspects of the subject, and dwelt more lengthily upon such human topics as false assumption, probability, and circumstantial evidence. His book also gains greatly by his discussion of points which are commonly left to the psychologist. He deals with observation, memory, sense perception, &c., from the point of view of the logician. Innovations of this character add to the value of an interesting little book.

EVERYMAN'S GOETHE.

Goethes Werke in sechs Bänden. Im Auftrage der Goethe-Gesellschaft ausgewählt und herausgegeben von Erich Schmidt. (Leipzig: Inselverlag.) In boards, 6 marks.

A SATISFACTORY selection of Goethe's works has been for many years a *desideratum* for the shelves of the general reader. Though various cheap editions of his collected works exist, notably the excellent "Jubiläumsausgabe" published by Cotta, no competent hand had hitherto been found to make a careful selection of the masterpieces and to place them before the public in a scholarly form, supplied with just the necessary amount of elucidation and annotation to help the general reader and to stimulate students to acquire a still deeper knowledge of the master-mind of German literature.

Owing to the generosity of the Goethe-Gesellschaft and the labours of the well-known Goethe authority, Prof. Erich Schmidt, of Berlin, this want has now been supplied, and we have in the volumes under notice an authoritative edition of Goethe's principal works offered to the general public at the cost of a few shillings.

The first five volumes contain, with few exceptions, all the poems, dramas, novels, and the autobiography (slightly abridged), while the sixth volume, upon which the learned editor has obviously bestowed especial care, is made up of a selection of Goethe's critical contributions to the realms of art, science, and literature. The volumes are printed in excellent type, each separate work is supplied with a general introduction and notes, and at the end of each volume a list of obsolete or obsolescent words and phrases is given with their modern significations. The text followed is in the main that of the "Jubiläumsausgabe" of Cotta.

A perusal of the biography of Goethe, with which the first volume begins, and an examination of the annota-

tions on poems such as "Ilmenau," "Hans Sachsens poetische Sendung," "Euphrosyne," and "Miedings Tod," and of the suggestive help with which works such as "Iphigenie" and "Wilhelm Meister" are provided, cannot fail to convince any student of the great value of this remarkable book, which we cordially recommend to the attention of school librarians and to those who are engaged in teaching German in this country.

The only defect in the arrangement of the volumes is the lack of an index of the first lines of the poems; we hope this omission may be rectified in future editions; and the sole criticism which we make is that in the biography, which is of necessity very brief, too much prominence seems to be given to the *ewig-weibliche*, and that the view which the editor puts forward with regard to Goethe's relations to Frau von Stein is never likely to be universally accepted.

NEW MUSIC.

(1) *The Public Schools Music Book.* By A. E. Baker. 64 pp. (Swan Sonnenschein.) 1*s.* 6*d.* net.

(2) *A Manual of Harmony for Schools.* By Francis E. Gladstone. 181 pp. (Novello, Ewer.) 2*s.* 6*d.*

(3) *Lessons in Harmonising Melodies.* By Cuthbert Harris. Book II. 58 pp. (Novello, Ewer.) 1*s.* 6*d.*

(5) *The Morris Book.* Part III. By Cecil J. Sharp and Herbert C. Macilwaine. 100 pp.; illustrations and diagrams. (Novello, Ewer.) 2*s.* 6*d.*

(6) *Morris Dance Tunes.* Sets V. and VI. Eight dances in each set. (Novello, Ewer.) 2*s.* each.

SCALE practice is proverbially the *bête noire* of the juvenile, and perhaps unwilling, pianist; but Mr. Baker's concise and pithy manual (1) of scales and arpeggios should go far to relieve, by its intrinsic interest, the monotony of the subject for all but the hopelessly "wooden-fingered." The author has not followed the time-worn plan of printing a mass, more or less coherent, of fingered scales and scale passages, but has, instead, tried to lead the student gently and easily from a consideration of the construction of the modern musical scale on to the point at which he will be tempted to walk over to the instrument and—commence to play scales! Much tedious explanation and tuition are thereby saved for the teacher.

For the earnest student of music wishing to experiment on the creative side of the art, Mr. Gladstone's "Manual of Harmony" (2) will be found a safe and conservative guide. Novelty of treatment is expressly disclaimed in the preface; but it is surely unusual to leave the treatment of unfigured bass to the eleventh chapter. Possibly the intention is that selected parts of the work should be studied side by side, and we would suggest that future editions of this admirable work would be the better for a note or two by the author giving the details of the method he would recommend. Very full consideration is given to the rules governing the resolution of discords, ambiguity being sedulously avoided, the chapter headed "Special Supertonic Discords" being perhaps the clearest and most logical in its arrangement that we have seen. Students who aim at writing ultra-modern harmonies should skip this in their studies.

Dr. Cuthbert Harris's "Lessons in Harmonising Melodies" (3) is the second part of a scheme, and is devoted to the consideration of modulated harmony, the use of passing-notes, and suspensions, concluding with a useful chapter on florid melodies. This work should be helpful to all who propose to sit for degree examinations.

"All work and no play"—let us look at some dance music. Those indefatigable workers Messrs. Cecil Sharp and Herbert Macilwaine have been pursuing their researches, unearthing more treasures in the shape of Morris dances and jigs. Part III. of the Morris Book (5) gives the results of their labours in the counties of Oxford, Gloucester, Northampton, and Derby, and contains full and precise instructions for the performance of every dance. It is matter for surprise that the Morris should have so nearly fallen into the limbo of forgotten things, seeing what a world of quaint beauty and charm it contains in all its varied forms. It is essentially national in expression, and should be preserved and handed on to our descendants if only to save England from the reproach of being the only nation that has no dance of its own. Time was when the polka—but no matter! We who can no longer waltz may now sit and watch our children Morris. We can also *listen* to it, and maybe touch it quietly on our own private piano at odd times, for your Morris is not to be danced to any music-hall tune, with its worrying suggestion of footlights and grease-paints. Where the Morris grew there also was the tune born—*nascitur, non fit.* Racy of the soil, irresistible in lilt, and oh! so plaintive in melody. Who and what were the men who first fashioned them, and where did they study "melodic form"? The two ardent collectors—Messrs. Sharp and Macilwaine—who have rescued so many of these beautiful melodies are to be complimented on the tactful manner they have adopted in their arrangement and harmonising. The "Notes for Musicians" in the forefront of the tunes are also admirable. Listen to this: "After playing the Once to Yourself, which precedes every dance without exception, the musician goes on without pause to play the dance music." What a delightful touch is that "Once to Yourself"!

IN PRAISE OF SOCRATES.

The Symposium of Plato. Edited, with Introduction, Critical Notes, and Commentary, by R. G. Bury. lxxii + 180 pp. (Simpkin, Marshall.) 7*s.* net.

LIGHT and pleasant the reviewer's task would be if all books were like this. It bears on every page the marks of good scholarship, and of a higher quality far, imaginative appreciation of the author. It is obvious that the work is the fruit of long study, for it shows a complete mastery of the author's thought, with a memory for the smallest verbal coincidences; and Mr. Bury has brought out a number of new points which make clear the artistic perfection of the composition. These echoes of word and thought do not obtrude themselves; they are not exact repetitions, like Homer's epithets, due to a childlike joy of life: but they link the parts of the work into one, showing one plan steadfastly kept in view, and giving point to each part.

The main object of the work seems to Mr. Bury to be the praise of Socrates; but this is conveyed in so delicate a manner that the hasty reader may attach more importance to other things. And, indeed, scholars have assigned other aims to the dialogue, such as the analysis of the love-passion, even literary parody. No doubt these things are in it, and the student of psychology or the literary epicure will be satisfied with what he finds, even if he finds nothing else. Yet there is no doubt in our mind that Mr. Bury is right: the work had another aim than these. It would appear that Socrates had been assailed on several grounds which are suggested by the dialogue; chief of these was his supposed immorality. That Socrates should

be a lover of the beautiful and a close friend of men like Alcibiades, and yet austere in life, was a thing incredible to the lewd and baser sort of mankind, as such things always are. How strong the slander was we can even now gather from its echoes. It was necessary to refute it; and, like a true artist, Plato puts the refutation in the mouth of Alcibiades himself.

We have no improvements to suggest in the book before us, although this is to sacrifice the reviewer's traditional pose of superiority. But in this respect the reviewer is proud to resemble Plato: he knows a good thing when he sees it, and he is glad to proclaim it with a clear voice.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

(1) *Souvestre, Le Serf.* Edited by E. Gould. 96 pp. (2) *Féval, Anne des Iles.* Edited by L. A. Barbé. (Blackie.) 8*d.* each.—These additions to Messrs. Blackie's Larger French Texts may both be recommended. "Le Serf" is fairly well known; it is a rather sombre tale of the Middle Ages. Féval's story is said to be based on a *tradition de la mer bretonne*; a pretty short story about a child, "Jean et sa lettre," has been added. In both volumes the text is well printed (we have noted misprints in "Anne des Iles" on p. 8 l. 20, p. 29 l. 23, p. 37 l. 8, p. 41 l. 5). The notes are competently put together; we are still unable to see any advantage in keeping the items of the "phrase-list" separate from the notes, as is done in "Anne des Iles." This book also contains six passages for retranslation. "Le Serf," on the other hand, has a "list of phrases" with English renderings and a *questionnaire*, consisting of from one to six questions on the subject-matter of each page, and of questions on grammar and vocabulary, which have been rather indifferently put together; there are none at all for some pages, and in no case do they really supply adequate exercises on the text. The vocabulary is fairly complete in both books.

Mme d'Aulnoy, L'Oiseau Bleu. Edited by E. T. Schoedelin. viii+88 pp. (Macmillan.) 1*s.*—This famous fairy-tale has been capably edited for Mr. Siepmann's Primary French Series. There is a good vocabulary; the *questionnaire* is satisfactory, and the exercises on syntax and idioms contain, beside English sentences for translation, some good reform exercises. There are also passages for retranslation, and lists of words and phrases. The notes are generally adequate; but we doubt the wisdom of bringing together *causer* and "to cause," *avertir* and "to avert," *prévenir* and "to prevent"; in spite of the warning as to the difference of meaning, their juxtaposition may lead the beginner to associate them in his mind.

Six Short French Plays. By A. S. Johnson. vii+96 pp. (Longmans.) 2*s.*—These short plays have been written by Mr. Johnson for the use of preparatory schools, and are illustrated by photographs of scenes acted by boys. They are mostly somewhat farcical, and will appeal to what is generally regarded as the sense of humour in boys of fourteen. The merriment is sometimes a little boisterous, but they will not object to that. Incidentally, they will learn a good many everyday words and phrases. The author has spared us notes. The text is well printed; actual misprints are rare, but the punctuation is often at fault.

A Classbook of French Idioms with Exercises. Compiled by J. E. Michell. vi+146 pp. (Meiklejohn and Holden.) 1*s.* 6*d.*—For the purpose of strengthening the vocabulary this carefully compiled book should prove useful, at any rate so far as idiomatic phrases are concerned. These are arranged according to verbs, each verb occupying a page, the French on the left half and the very good English renderings on the right half. The second part of the book consists of exercises, *i.e.*, English sentences the translation of which necessitates the employment of the idioms learnt. In a fairly advanced class this book might well be of service.

(1) *A First French Unseen Book.* vii+56 pp. 6*d.* net. (2) *A Second French Unseen Book.* v+97 pp. 1*s.* net. By J. D. Shrive. (Mills and Boon.)—These books are largely compiled from papers set (1) at the Oxford and Cambridge Preliminary Local examinations and at certain examinations of the College of Preceptors; (2) at the Oxford and Cambridge Junior Local examinations and certain examinations of the College of Preceptors. The editor has supplied renderings of the more difficult words at the end of each passage. The books have been carefully printed, and may be recommended to those who believe in giving their pupils collections of snippets. Many nowadays prefer continuous texts.

Classics.

The Syntax of High School Latin: Statistics and Selected Examples arranged under Grammatical Headings and in Order of Occurrence by Fifty Collaborators. Edited by Lee Byrne. xii+54 pp. (University of Chicago Press.) 3*s.* net.—The title of this book accurately describes its contents. We need only to add that the book covers the four books of Caesar, six speeches of Cicero, and six books of Virgil which are the school course in America. This limitation a little detracts from its value; but although a complete analysis of certain Latin authors—one of each and one combined—would have been more useful, as it is the book is indispensable to the teacher. Without it he can only guess what constructions are common; he must have it if his own lessons are to be properly graduated. With Lodge's Vocabulary, the teacher has now a means of exact knowledge the value of which is very high. There are many surprises in the lists: we will name one or two. In all these books there are only seven genitives of value, two in Caesar and one in Virgil; only seven cognate accusatives; only one example of *noli* c. inf. as against fifteen of *ne* c. imperative, all in Virgil; no examples of *ne* c. perfect subjunctive; eight supines in *um* and sixteen in *u*. These alone are enough to show that the teacher must have this book.

Selections from the Latin Literature of the Early Empire. Edited by A. C. B. Brown. Part A. Inner Life. 128 pp. Part B. Outer Life. 128 pp. (Clarendon Press.) 4*s.* 6*d.*—This is a good idea. Not that the idea is new of illustrating Roman life in a reader: but hitherto the Republic has held attention and the Empire has been neglected, although the Empire is of profound importance in history. Some of the extracts given in this book are well enough known, but it is an advantage to have them together, in a book of moderate size, for the reader who will not perhaps make a special study of classics. On the other hand, many of the pieces will be new, not only to the schoolboy, but to the schoolmaster, whose enterprise in reading is by no means great. Thus under politics, besides Tacitus and Juvenal, we have a piece out of Seneca's Ludus; under education, a valuable piece out

of Tacitus's Dialogus (but, strange to say, no Quintilian). Horace, Pliny, and Juvenal are drawn on for literature and philosophy. The second part will be more interesting. Here we have social types: Horace's bore, the Greek, the Legacy Hunter, Patron and Client, the Spendthrift, the Bluestocking, and others, all well-known pieces. Under social incidents there are the Roman day, dinner parties (including a bit of Trimalchio), and the journey to Brindisi. A few pieces illustrate town and country life. There are maps of Rome and of Italy. A few good notes are supplied, and the book is well printed. We are glad to recommend it.

Roman Life Reader. By S. E. Winbolt and F. H. Merk. For Fifth Forms. xii+236 pp. (Constable.) 2*s.* 6*d.* net.—This is another book of unhackneyed pieces which should be welcome in schools. It is true some of the pieces are from familiar authors, but they are still made fresh by their context. Thus we have Cicero, Horace, and Seneca De Morte, which by the aid of the classified index may be read together. From this index we see that the subjects included are religion, outer and inner, constitution and politics, military life, philosophy, literature and art, domestic life in town and country, nature, and history. A short introduction sketches the lives of the authors; each extract has a few notes on allusions, which we approve; the translated words were best left alone, in our opinion. The book is well printed. To read such extracts is not so good as hunting up the passages in a form library as the occasion calls for them; but the book has very obvious advantages, and it deserves attention.

Clari Romani: Camillus (Simplified Text). By C. H. Broadbent. viii+104 pp. (Murray.) 1*s.* 6*d.*—We have already welcomed this series as planned on a sound principle. The books differ in difficulty: this should be within the powers of the third year of Latin. At the end are grammatical exercises and sentences for translation, interleaved, some historical notes, and a vocabulary. We regret the last.

English.

The Elements of Language. By F. H. Chambers. xv+218 pp. (Lincoln: Ruddock.) 1*s.* 6*d.* net.—The headmaster of Lincoln Grammar School wishes this book to be taken as "the record of an attempt to eliminate from the elements of language rules and formulæ of any sort, and to teach from first principles only." He has had chiefly in view the present condition of Latin in the modern secondary school. He thinks that pupils in this type of school reap from their Latin merely "the useless and barren experience of learning forms by heart . . . and that their sole stimulus is that of the organ-grinder's monkey, stripes when they fail, sugar when they succeed." We can only say that our experience differs from his so much that we have looked—but in vain—for a date on the book's title-page to see whether we are not dealing with a reprint of at least ten years ago. Let Mr. Chambers take heart; Latin is often taught nowadays quite intelligently, and it is no longer necessary to teach the elements of language by any other means than by the mother tongue. We remember that less than a dozen years ago a headmaster who was then—as he is now—a bright light among the theorists and practitioners of pedagogy, assigned a period in the Latin course to lessons in English grammar. But at that time there was no English Association and—in England—no Classical Association.

But this is perhaps dealing with Mr. Chambers's book, as he himself might say, on "first principles," rather than on its own merits. We have pleasure, therefore, in saying that it is brightly and lucidly written, and that there is not a word in it which boys will not be the better for knowing in due time and in due place. That language should be treated as essentially *one* is obviously right, but we cannot admit that for English children it is necessary or desirable to teach its elements except through English itself. Occasional illustration from other languages is another matter altogether.

English Composition in Theory and Practice. By H. S. Canby and Others. xii+404 pp. (New York: The Macmillan Company.) 5*s.* net.—The minute care which American teachers bestow upon the teaching of English composition is the wonder and despair of their English fellows. Here we have one more example of it in a book written by five members of the Department of English Composition in the Sheffield Scientific School of Yale University. As usual in American books of this type, the purpose is primarily to provide a set of directions for good writing; and in the present case this purpose is illustrated by a varied and extensive collection of examples drawn from all the forms of discourse. We heartily agree with the authors' emphasis of the importance of exposition among these forms, because, in their own words, "for the average student it is the power to explain clearly which is of primary importance." We must own that, in view of the attention given to English composition in America, we are a little surprised to find the elementary principles which are insisted upon in a book evidently intended for college students. For instance, at the end of Mr. A. C. Benson's essay on games we have a kind of treatise on the use of summaries; and among other fairly obvious remarks we are told that "every theme, even a short one, should have a proper ending." We agree; but surely such a matter—at any rate, in the extremely simple way it is put here—has been treated in the junior and middle forms of the secondary school? But such pupils are not usually given a book of 400 pages on the principles of English composition. And so with the appendices; exercises in transitional words within the paragraph, in sentence structure, in the use of words, even in punctuation, are all good—for young pupils at school. On the whole, we think that the book would be more useful in the hands of a teacher of English in middle forms than for the purpose primarily assigned to it by its authors.

History.

IN the review in our November issue of "A History of the British Dominions beyond the Seas," by Avary H. Forbes (Ralph, Holland and Co.), the statements were made that "each chapter consists . . . of two sections, one of Clough's authorship, written, apparently, fifty years ago, and one of the editor's, adding events, not to this year, but, so far as we have found, to 1905." The publishers of the book direct our attention to the fact that the first statement, though in our judgment a natural inference from the preface, is far from being true, since Clough's book, of which the present volume is an extension, was published first in November, 1899. The second statement, we regret to find, is incorrect; our reviewer missed some dated references to events which happened later than 1905, and we are glad of this opportunity of rectifying a remark likely to prejudice the book.

A Chronology of British History. By A. Fairbairns. 186 pp. (Stead's Publishing House.) 1*s.* net (or in four parts, 2*d.* each net).—We have here a list of events from

1000 B.C. to the present year, with brief comments, illustrated with pictures of those sovereigns of whom authentic portraits exist. There are also genealogical tables; and the most noteworthy features are the notices of literature and of scientific achievements, especially in recent years—*e.g.*, the achievements of aeronauts and the Harmsworths securing control of the *Times*.

A History of Great Britain. By T. F. Tout. Part I., to 1485, xxii+199 pp. Part II., 1485–1901, xxiv+238 (189–426) pp. (Longmans.) 2*s.* each.—A reprint of one of Prof. Tout's well-known and valuable text-books supplied with illustrations, indexes, &c.

Home and State. By S. Cunnington. xiii+197 pp. (Methuen.) 2*s.* 6*d.*—An introduction to the study of economics and civics, treated in two parts. History is used to lead in each up to our present condition, economically and constitutionally. The treatment is interesting, and not too deep for either the general reader or the pupils in our upper forms for whom the book is designed; and though the history is not always quite correct, the account of present-day economics and civics is good and useful. There is an index.

A Junior History of Great Britain. By E. M. Wilmot-Buxton. xi+210 pp. (Methuen.) 2*s.*—The story is lightly and pleasantly told, though not always quite exactly, and is very slight after the Battle of Waterloo. There are six maps, and to each chapter there are added questions and suggestions, but the especial feature of the book consists in the quite unusually good selection of poetical passages which follow each chapter.

Stories from Old Chronicles. Edited by K. Stephens. xii+230 pp. (Sidgwick and Jackson.) 1*s.* 6*d.*—Miss Stephens prints in her frontispiece a quotation from John Ruskin, that "the only history worth reading is that written at the time of which it treats," &c.; but many of her extracts do not conform to this standard, those from Holinshed and Henry of Huntingdon, for example, and even Froissart is not to be relied on, as, indeed, the editor acknowledges when she treats of the Peasants' Revolt. But, at any rate, here we have adapted for young modern readers fourteen stories from mediæval British history which will help to "realise the lives and deeds and thoughts of our forefathers," if not at the period of which they write, yet "in earlier centuries of England's story."

A Child's History of Great Britain. By C. L. Thomson. 173 pp. (Horace Marshall.) 1*s.* 6*d.*—Here is a "short and simple sketch" written by request, arranged under chapters corresponding, where possible, to the reigns, and illustrated (the last is a picture of a flying machine of this year). There is a list of kings with their dates, which we are glad to note Miss Thomson thinks should be learned, and an index.

Mathematics.

A Class Book of Trigonometry. By C. Davison. viii+200 pp. (Cambridge University Press.) 3*s.*—This is an unpretentious but thoroughly practical introduction to trigonometry. The oral exercises, which enable a teacher to drill his class in the use of the fundamental relations and transformations, form a special feature, and one which should prove of great value. We notice that the form of the proof of the summation theorem, in which the projecting lines are left to the imagination of the pupil, is not used, and the author's experience probably confirms our own, that this mode of presentation is unsuited to beginners. We do not agree with him, however, in thinking that the use of rough graphical checks tends to lessen confidence in the accuracy of the purely trigonometrical solution, for we consider that the concurrent use and comparison of the results obtained by different methods stimulates the interest and helps to break down the idea that algebra and geometry are to be kept apart. The text is not overloaded with detail, attention is concentrated on essentials, and there is an abundance of examples. We anticipate that teachers will find great satisfaction in using the book.

A Geometry for Schools. By F. W. Sanderson and G. W. Brewster. x+336 pp. (Cambridge University Press.) 3*s.*—A well-designed text-book on modern lines. The earlier part of each chapter treats the subject-matter experimentally, and is intended to make the pupils acquainted with the facts of geometry. This part is followed by a theoretical one containing formal proofs of the propositions and a collection of riders. The ground covered includes the theory of similar figures. Free use is made of elementary algebra, and the elements of co-ordinate geometry are introduced. The great merit of the book is that it maintains a fair balance between the inductive and deductive methods.

The Public School Geometry. By F. J. W. Whipple. xii+154 pp. (Dent.) 2*s.*—This work contains the substance of the first four and the sixth book of Euclid's Elements. The style suggests that the author has tried to "write down" to the level of the intelligence of the schoolboy at the age when he begins geometry. There is an evident straining after simplicity of expression; but there is a lack of consistency, and the results are not altogether happy. For example, take the following definition: "Cognate angles. The angles on the same side of the cutter and towards the same end of it are called cognate angles." *Secant*, which might be used, and has, at any rate, a well-understood technical meaning, having been discarded for *cutter*, which suggests a tailor or ship, but not a line, it is surprising to find the word *cognate* introduced without a hint of its real meaning or why its use is appropriate in this connection. So also we find *stretch*, *2-way case*, *path of point*, instead of *finite straight line*, *ambiguous case*, *locus*. Why not also *toucher* for *tangent*, &c.? There is no valid reason for altering the accepted phraseology, which will have to be learned later. The "three-side congruence" is established inductively from experiment. We fail to understand the remark in the preface that "no proof which does not mention angles has been found for this theorem about lengths." We have always understood that the object of the theorem was to establish the equality of the angles. The tangent at any point P is defined to be "a straight line through P such that any short chord through P makes a very small angle with the tangent." How does this distinguish the tangent from any "very small chord" through P? Defects like these detract considerably from the value of the book.

Science and Technology.

Elementary Treatise on Physics: Experimental and Applied. By Prof. Ganot. Translated by Dr. E. Atkinson. Eighteenth edition. Edited and revised by Prof. A. W. Reinold, F.R.S. xiv+1220 pp. (Longmans.) 15*s.*—There are few teachers of physics who do not know Ganot's "Physics" as a familiar friend. The demand for an eighteenth edition is excellent testimony to the con-

tinued popularity of the work. Prof. Reinold has done his work well; the book has been thoroughly revised, and a more systematic arrangement of subjects has been introduced. The chapters on telegraphs and telephones, direct- and alternate-current dynamos, electric oscillations and wireless telegraphy, have all been extended. New matter has been added in connection with gyroscopes and their application in modern inventions, aerial navigation, colour photography, turbine engines, refrigeration, radiation and radio-activity, and many other subjects.

Practical Home Sewing and Dressmaking. By Isabella Short. 215 pp. (Blackie.) 2*s.* net.—This excellent little book will doubtless be, to quote the hope expressed in the preface, "a useful guide and help, not only to teachers, but to all anxious to learn and put to practice the knowledge obtained from the instruction given at the various classes" (in domestic science). Miss Short's style is simple and is aided by clear illustrations, thus making the information contained in the book intelligible even to the most ignorant of pupils and housewives. Beginning with the elementary yet necessary explanation of stitches, patching, darning, &c., the book goes on to the more difficult subject of cutting-out, which loses its formidable aspect when tackled by Miss Short's special system of "paper-folding." In addition to several chapters on dress-making, the book includes hints on the management of a sewing machine and some useful information on the kind of materials employed for different garments, with their approximate width and price.

Simple Form of Expansion Apparatus for Students' Use. Designed by E. Newbery. (Philip Harris.) Complete with copper rod, 5*s.* net.—A specimen of this simple form of expansion apparatus has been submitted to us by the manufacturers. The apparatus consists of a narrow glass tube forming a steam jacket, constricted near the top and bent at the bottom. Within the tube is a half-metre stout metal wire, which is fixed at the constriction and passes through a hole near to the bottom of the steam jacket. The expansion of the wire is indicated and measured by means of a long aluminium pointer attached to its lower end. The apparatus is suitably mounted on a wooden stand. We find that the coefficient of expansion can be determined in less than ten minutes, and a result obtained for copper was 0·000016. This is exceptionally good for so simple an equipment. Extra glass tubes fitted with wires of other metals are supplied at a small extra cost.

Ancient Plants. By Marie C. Stopes. viii + 198 pp. (Blackie.) 4*s.* 6*d.* net.—Authoritative books on palæobotany have hitherto been largely beyond the comprehension of all but advanced students. It was a happy thought, therefore, which led Dr. Stopes to put the broad principles of the science into a form intelligible to botanists of quite moderate attainments, and to explain the significance of some of the very interesting discoveries made during the past few years. Both author and reader are to be congratulated on the discrimination exercised in the performance of so difficult a task. The descriptions and explanations are clear; the space allotted to the various groups is in well-balanced proportion; the information is thoroughly up-to-date; and the numerous illustrations are really explanatory. In all respects the book is a much needed stepping-stone to the more technical treatises.

Qualitative Analysis. Tables for Use at the Bench. By E. I. Lewis. (Cambridge University Press.) 2*s.* 6*d.* net.—An innovation well worth the notice of those concerned in the teaching of elementary chemical analysis. The author has compressed the tables necessary for the examination of simple salts and easy mixtures into eight sheets, which are printed on four pieces of stout cardboard. The latter are fastened together at the top by two metal rings passed through eyelet holes, so that the cards will stand easel-wise on the bench, and can be turned over quickly and easily as occasion requires. The sheets are bound with metal strips and protected by varnish from corrosive liquids. The tables themselves leave little to be desired either in matter or arrangement, the main directions being printed in red ink. Reasons are given for the procedure at difficult points, as, for instance, the use of ammonium chloride in the precipitation of metals as hydroxides by means of ammonium hydroxide.

Art.

Modelling from Nature. By Lilian Carter. 32 pp.; 16 plates. (Cassell.) 1*s.* 6*d.* net.—This book on modelling from nature fully justifies the claim of its author that it is based on an entirely new and original method, which method, moreover, appears to be based in turn on common sense and sound constructive principles. The book is concerned with the teaching of modelling, as the ally of nature-study, to children of elementary-school age. There are preliminary suggestions as to materials and apparatus in which moderation and simplicity are outstanding features. It is pleasing to note, in this connection, that the fullest possible use of nature's tools—thumb and finger—is strongly advocated; if this were more universally practised we should see less of the clay *carving* which so often masquerades as clay *modelling*. The principle of the method is the building up of the model (which is usually some simple fruit or vegetable form) with regard to its internal construction and order of growth, using vari-coloured clay or plasticine to distinguish the various parts. As the method necessitates a careful preliminary analysis of the object, it is evident that it will prove an important factor in the study of nature, apart from its value as a handicraft. The method is exemplified in a course of fifteen interesting and suggestive lessons, which are illustrated by photographs of actual models made by children.

Perspectiveland, or how Peggy Learnt to Draw. By Rosa Waugh. 80 pp. (Stead.) 9*d.* net.—The author of this book suggests that perspective should be introduced as an observation study for children, and shows how the principles may be brought to bear upon a child's efforts in drawing. The lessons are set forth in narrative form, and relate to the adventures of seven-year-old Peggy and her friend Prof. Miligan, in the course of which the professor—by means of ingenious, if occasionally laboured, devices—contrives to acquaint his little *protégée* with the phenomena of perspective as they occur in the appearance of the roads, trees, fields, &c., of their everyday surroundings. Waiving the question as to the advisability of introducing the problems of perspective to children of such tender years, this little book may well become, in the hands of a sympathetic and discriminating teacher, a power for good in developing and quickening the child's powers of observations and understanding.

Miscellaneous.

First Principles. By Herbert Spencer. Two volumes. Vol. i., xx + 221 pp. Vol. ii., vi + 271 pp. (Williams and Norgate.) 1*s.* net each.—This is the first "popular" edition of a work with which all teachers might with advantage be acquainted. We notice that this is the third

impression. In addition to the ordinary chapters, the volumes contain the prefaces to the fourth edition of 1880 and the sixth edition of 1900.

The Epistle to the Hebrews. By Edgar J. Goodspeed. The Bible for Home and School. 132 pp. (New York: The Macmillan Company.) 2*s.* 6*d.*—This is a serviceable book. The whole question of authorship, date, occasion, and purpose is very clearly and impartially discussed in the introduction. When so much is doubtful and evidence is so scanty, conclusions must necessarily be tentative. The text is furnished with a running analysis and notes at the bottom of the page, which commend themselves by their clearness and relevancy.

S. Matthew. Edited by the Rev. Geo. Carter. Preliminary Scripture Manuals. 124 pp. (Relfe.) 1*s.* net.—The book is adapted for the purposes of twelve-year-old examinees, but, even so, it is a pity to revert at this time of day to the printing of the text in separate verses, as though each verse were a separate paragraph.

S. Mark. Edited by the Rev. A. S. Walpole. 92 pp. (Oxford University Press.) 1*s.* 6*d.*—The notes are reduced to a minimum; the introduction serves its purpose well; the special feature is found in the fine illustrations taken from Dr. Sanday's "Sacred Sites of the Gospels."

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.*

London's College List Teachers.

THE question of London's unemployed teachers continues to be discussed widely, and these teachers lose no opportunity of impressing on the public the hardships of their position. But one result of their efforts has been that there is a great deal of misapprehension in the minds of readers of the newspapers as to the main feature of the College List maintained by the London County Council, and this has led to the dissemination of wrong ideas.

It is not realised sufficiently that this list is a list of teachers permanently appointed to the service of the London Education Committee, who have been appointed in what is really an open competition. The competition is not, it is true, of the usual kind—by advertisement, interview by managers, and so on. It is of this kind: three of the Council's inspectors visit a large number of training colleges to interview applicants for posts in boys' schools; three inspectors visit other training colleges to see applicants for positions in girls' schools; and three inspectors visit more training colleges to consider the claims of applicants for posts in infants' schools.

The colleges visited are those all over England and Wales (and sometimes Scotland), from which trained students are anxious to enter the London Service. More than this, students from other colleges are interviewed in London, the travelling expenses to and from London being refunded to the unsuccessful candidates.

During their interviews with candidates in the various colleges the inspectors have before them a specially prepared schedule containing particulars of the qualifications and experience of the applicants in each college, and the assessment of the principals of the colleges on them. In addition to what they learn of each candidate at the interview, the inspectors have the opportunity, if they desire to avail themselves of it, of consulting the principal of the college about any particular candidate.

Though it may be recognised that such a system, like any other method of selection, has imperfections, it must be admitted that it is an open competition, and when once the candidates are recommended by the inspectors and approved by the Education Committee they are, from the beginning of the session following the visit of the inspectors, that is, about two or three months subsequent to the date of the interview, teachers permanently appointed to the service of the London County Council, and they are paid the salaries of permanent assistants as from that date.

At the beginning of the session there are not always vacancies for the whole of the teachers on the list. Teachers for whom there are no vacancies are employed in the schools as supernumeraries, filling the places of absent teachers, and so on. As vacancies occur the managers of schools are required to fill the vacancies by appointing one of these permanent "College List" teachers until, of course, the list is exhausted.

In other words, the "College List" is not merely a list of eligible applicants, but a list of teachers permanently in the service of the London County Council. Further, a larger number of teachers is employed at the beginning of the session than is justified by the actual number of vacancies in existence at that time. The plan, however, enables the London County Council to secure the pick of the students in the training colleges throughout the country.

The only question which arises after a teacher has been placed on the "College List" is his allocation to a school.

Too much emphasis is put on the view that provincial education authorities will not appoint in their schools any teachers except those trained in local colleges. Some London training colleges have been visited by representatives of education authorities in different parts of the country for the purpose of selecting teachers for their service.

I have explained the precise character of the "College List" of the London County Council with no desire to minimise the hardships of the unemployed teachers in London. I am at one with them in their desire to see the employment of many more certificated teachers in our elementary schools, the reduction in size of the enormous classes which are still far too common, and the general improvement of the conditions of service in these schools. But no case is improved by encouraging misapprehensions, and this statement of the real nature of the "College List" may do something to allay the anxiety of those of your readers who feared that an injustice was being done to the average training college student.

R. M. SEBAG MONTEFIORE.

County Hall, Spring Gardens, London, S.W.,
November 16th, 1910.

Conditions of Service of Teachers.

THIS association has recently conducted an inquiry into the conditions of service of teachers in English and foreign secondary schools.

The results show that, with respect to tenure, salaries, and pensions, teachers in English secondary schools are much less favourably situated than those in the schools of other countries.

How inadequate this statement is can be realised from returns just obtained from English local education authorities.

Sixty-two have salary scales.
The initial salary is:

	£100 or less	£101–130	£131–150	Over £150
Under	6	37	15	4 authorities.

The annual increments are:

	£5 or less	Over £5 and under £10	£10 or over
Under	6	25	31 authorities.

The final salary is:

	£200 or under	£201–250	£251–300	Over £300
Under	41	18	2	1 authorities.

The salaries of State Oberlehrer in the largest German States, which together contain more than three-quarters of the population of Germany, are:

	Initial salary £	4th year £	7th year £	10th year £	13th year £	16th year £	19th year £	22nd year £
Prussia	135	170	205	240	270	300	330	360
Bavaria (1)	240	265	290	315	340	360	—	—
(2)	150	175	200	225	250	275	300	—
Saxony (1)	180	210	240	270	300	330	360	—
(2)	180	205	230	255	280	305	330	—

In no German State is the initial salary less than £100; in three only is it less than £130; and in one of these there are two scales, one beginning at £125, the other at £150.

In no German State is the final salary less than £250, and in all but one it is well over £300; thus 59 of 62 English education authorities are paying salaries on a lower rate than any German town or State.

Now I venture to draw two or three comparisons. There is a nearer approach to equality between the scales of London and Berlin than those of any other corresponding towns. The advantage is with Berlin; the salaries of all the Oberlehrer rise automatically to £360, plus rent allowance, which varies from £60 to £28, while in London comparatively few men can hope to reach £350. Liverpool and Hamburg present a greater contrast. The initial salaries are £150 and £200 respectively. Liverpool has no regular increments; those at Hamburg are equivalent to at least £10 a year; at Liverpool probably very few teachers are in receipt of £400 a year; while at Hamburg the salaries of an Oberlehrer rise automatically to £450. One other example:

	Initial salary £	Average annual increments £	Final salary £
Bristol	130	10	170
Bremen	200	10	390

Five or six English education authorities make arrangements for the superannuation of their teachers, but require a contribution from them.

Every German State provides pensions of from 75 to 100 per cent. of the last salary, and about half the States —not the largest ones—exact contributions.

You will, I think, agree that the present conditions in this country militate against efficient education in two ways. They do not attract into the teaching profession a sufficient number of capable and suitable men, and they do not enable the teachers already in the schools to do their best work. And, further, conditions that adversely affect the schools militate against national efficiency.

FRED CHARLES,
Chairman of the Incorporated Association of Assistant Masters.

Dangers in our Modern Educational Methods.

ONE of the great dangers in our modern methods of education is that, although we are giving our pupils a better outfit for the struggles and duties of life than was given a generation ago, we are not giving them the backbone and grit which are necessary in order that they may make the best use of this outfit. We are teaching them to reason; we are giving them more ideas, broadening their sympathies, and widening their outlook on life; but, judging by the general spirit of the age and by the tone in our schools, we are not developing self-dependence and self-control to the extent that they were developed by the old methods. There were certain good features in the old "dry-as-bones" system which it would be well for us to bear in mind with the view of readopting them into our present system. They will not then be what they were before, for the ideas and ideals of our modern system will assimilate them and revivify them, while they in turn will prevent us from becoming too idealistic in our methods.

In our efforts to make our pupils grasp the big, general principles, and to reason and deduce for themselves, we are in danger of forgetting to emphasise sufficiently the facts to which the reasoning should lead. The result is in many subjects a general vagueness and want of accuracy which it would be wise to check before a type of mind is developed which is content with half-truths.

In the old system the pupil was obliged to learn by heart lists of names, dates, events, declensions, conjugations, &c., and the mind was fixed on the one thing, viz., the fact. In our modern system the ideas called into existence in the mind in connection with each fact are numerous, and often precede the knowledge of the fact or lead up to it; and unless we are very careful to emphasise the fact and see that it is really grasped, the pupil will probably be very hazy about it, and soon forget.

The examiners' reports on the Senior Oxford examinations held in July, 1910, seem to confirm my opinions. The following is a sentence from the report on history: "There is, however, a tendency towards vague and unsupported generalisation." On geography this report is made: "The weak point of the whole examination is, however, the general want of accurate knowledge of topography at all proportionate to the rest of the work. . . . Candidates who gave excellent answers to questions on the cotton-manufacturing districts of Lancashire not infrequently gave unmistakable evidence (direct or indirect) in answering the map question that they had no clear idea of the position in England of the places they had been writing about."

Perhaps the subject which has undergone most change as regards teaching and method in recent times is geography; and it is in this subject that vagueness and indefiniteness are in greatest danger of being developed by faults in our new scientific methods. Formerly the pupil learnt by heart lists of towns and of exports and imports. Facts alone were important, and a certain amount of effort had to be expended by the pupil to acquire them. To-day, before the position of the town is thought of, there have been many ideas called into existence in the mind in connection with it: those relating to geology, physical features, climate, &c.; and the attention has not been given to the fact alone, but to numerous causes which have helped to determine it. Unless, therefore, we are careful to impress upon the pupil the importance of the fact and the necessity, not only for grasping it, but for remembering it too, a vagueness as to the positions of places is sure to result.

We must insist on a certain amount of what may be called drudgery work. The pupil must not expect every lesson to be one in which his interest alone is called into play. The teacher must teach less and expect more. We

are so afraid of making our lessons dull and uninteresting to our pupils, so afraid that they will not like the subject that we ourselves have but recently discovered is so interesting, that we shirk the dry facts, and devote ourselves to the more interesting reasoning connected with them.

The teacher now does all the really hard work in preparation for examinations. Lessons are so thoroughly worked out and systematised that the pupil has nothing to do but assimilate what is presented to him in a very agreeable and palatable form. He has learnt to trust his teacher and to admire the teaching, and, as a rule, is interested in the subject, but quite unprepared to do any real hard work or to make any great effort for himself. It would be a good thing, in my opinion, if the teacher of geography would say now and again to pupils in middle and upper forms: "I shall leave you to get up the geography of Ireland, say, for yourselves, on the same plan as I have used in preparing other countries with you. I shall expect you to be able to answer a test examination paper on it in a fortnight's time." Books should be recommended, and the nature of questions which will be set might be given, but the pupil should be expected to do the rest. Of course, this can only be done successfully when our pupils have had time to learn from us the methods of approach.

In history, too, much more might be done by the unaided effort of the pupil if the seminar method were occasionally adopted. Different pupils might be told off to get up, from books recommended by the teacher, the progress of the Seven Years' War, say, in the different countries concerned in it. One or two lessons could then be given to the hearing and criticising of papers read by the pupils, and to the summing up and gathering together of loose threads by the teacher.

Unless we demand more effort from our pupils than is at present demanded, we shall find as a result of our new scientific methods that they will grow up backboneless creatures, interested in many subjects, but without the perseverance and pluck to excel in any one.

That the pupil should be interested in the subject is the first and perhaps greatest essential; but let us not forget that here, as in other departments of life, difficulty and trouble are almost a necessity for the acquisition of grit, and it is in grit that the present generation tends to be lacking. It is the almost inevitable result of the enthusiasm and scientific zeal which has arisen in the teaching profession. Subjects have been born again, as it were, and are almost as new to the teacher in their reformed state as to the pupil. The joy of teaching is now universal, and is so great that perhaps we are in danger of over-teaching. Effort is so much less needed on the part of pupils and students than it used to be. Municipalities are doing so much. A good education may be had with little or no sacrifice on the part of anyone. Books are provided free; examination fees are paid; everything is given, and everything expected by the pupil. And what is the result? We are turning out of many of our schools easy-going, mediocre individuals who expect the school to find posts for them, or, if they have been trained as teachers, feel aggrieved if they are called upon to accept a post at any distance from their native town.

It is all part of the spirit of the age: an age when the individual has begun to expect to receive much and to give little for it. It is no longer necessary for parents and students to stint themselves and go without luxuries and pleasures in order that a college education may be within reach. The path to a secondary and higher education is comparatively easy, and the result is more intelligent and intellectual human beings—no one will deplore that—but human beings with less grit, less pluck, and less moral courage than before.

KATHERINE I. WALLACE.

The County Secondary School, Peckham, S.E.

A Simple Compass Needle.

IN simple experiments in magnetism one often wants a very freely moving compass needle. Most pivoted instruments move with too much friction, and a needle suspended by a fibre is somewhat inconvenient. The kind we have used for some years in this laboratory is at once so simple and apparently so little known that it may be worth while directing the attention of your readers to it. It is simply a thin magnetised sewing needle laid on the surface of some water in a glass salt-cellar about 1½ to 2 inches in diameter. As it is important that the water should be *very clean*, it is well to swill out the salt-cellar at the water-tap and then fill about three parts full of water, taking great care not to let the fingers touch the water in the vessel. The magnetised needle is then carefully dropped on to the surface, where it lies quite dry, and always places itself well away from the edges. If the water be kept *very clean* it will be found that the needle responds readily to very minute magnetic forces; *e.g.*, it is easy to show that a straight piece of soft iron wire about 1 foot long which has been dropped on to the table in the plane of the magnetic meridian has one end N. seeking and the other S. seeking.

It is also interesting to see the inductive effect of the earth's field if we place the salt-cellar near the edge of the table and hold the wire in a vertical position with its upper end near the needle. It will generally be found, if this wire be sufficiently soft, that the upper end is S. seeking. If now the upper end be kept where it is while the whole wire is rotated through 180° about this end, so that this end now becomes the lower end, the movement of the floating needle shows a falling off in the strength of the S. seeking polarity, and may, indeed, show complete reversal to N. seeking polarity. The reversal may be brought about easily by tapping the wire with a pencil or by bending it slightly. G. A. S.

The Physical Laboratory, University of Birmingham.

The School World.

A Monthly Magazine of Educational Work and Progress.

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