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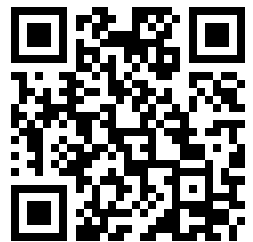
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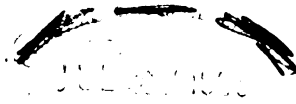
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SIXPENCE.

STUDIES IN SCHOOL MANAGEMENT.

I.—SCHOOL AND HOME.

By J. L. PATON, M.A.

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THE favourite object of ridicule in the schoolmasters' common room is the fatuity of the British parent, and not infrequently over the parent's tea-table the chief topic of conversation is the fatuity of the schoolmaster. There is no diversity of interest; both profess to have at heart first and foremost the good of the same children. But there is a diversity of method and of policy, and there is quite as much misunderstanding on either side as there is diversity of method. This misunderstanding is a serious hindrance to the achievement of what both in common are aiming at, and the object of this paper is not to show that school-teachers are right and parents are wrong, but, inasmuch as one without the other cannot be made perfect, to discuss how the hindrance may be lessened and better understanding be established between what ought to be the two chief moralising agents in the State, the school and the home.

Let us, on one side, frankly admit that the improvements of more recent times in our English schools are in no small measure due to parents. The establishment of Mr. Squeers, and the horrors, not unlike those of Dotheboys Hall, which flourished unchecked in our public schools of fifty years ago—bullying, coarseness, ill-regulated fagging, bad and insufficient food, the general policy of *laissez-faire*, which meant in effect the supremacy of the brute—all this was directly due to the exclusion, the apathy or the indolence of the parent. As soon as, with the advent of railways and the higher education of women, the mother came upon the scene—and her visit of inspection was both more frequent and a good deal more thorough than the father's visits was of old—all this had to be changed. The awakening of the parent brought about the awakening of the schoolmaster. It ill becomes us, therefore, to resent "interference" as "unwarrantable," for interference even is a sign of interest, and any sign of interest is to the good, even though it be not always according to knowledge.

It is well also to bear in mind that secondary

education is now become practically an affair of the State, that educational progress will depend not only on the excellence of the teachers, but on the recognition of that excellence by the public at large. In other words, the schools must be able to command the confidence of the community which they serve, and the confidence of the public cannot be won by throwing stones at it, or by any attitude of aloofness.

There are in this matter two errors against which it is well to be on our guard. The first is that it is possible to mark off two separate provinces, one for the teacher and another for the parent; and thus, by a sort of delimitation of frontier, to avoid friction. "Let the school impart knowledge and let the parents be responsible for all beside." The thing is to any real teacher unthinkable; it means the degradation of the school to the level of the shop, where knowledge is purchasable at so much the pound. It is, moreover, impossible, for there is no instruction possible except through the medium of a personality. With children yet immature, it is only through the interest in a personality that we can secure the interest in this or that subject of knowledge. Knowledge is a fire which must be handled by an external agent, as Dr. Johnson said. Vital education is a direct working of spirit upon spirit. The personality is the first thing. It is also the last thing; for, when all a teacher taught us is forgotten and effaced from our minds, there is something which yet remains, and that is the influence of the teacher himself. The ultimate lesson a man teaches is himself—what he is; that, not voluntarily but involuntarily, he teaches.

Again, there is an idea on the part of parents that the school is pre-eminently the place of discipline. This, too, is radically unsound, for it involves by suggestion the counterpart, viz., that home is pre-eminently the place of indulgence. Wherever this idea is held, the schoolmaster finds that his first duty, which takes up the chief part of his time, is the uprooting and repressing of bad habits already formed. Discipline cannot begin too early. Directly a baby begins to have a will of its own (and it is wonderful how soon the bump of self-assertion develops), it has to be taught that its will is not the only will in the world, that for the sake of the other people's wills and needs its own little will must be restrained and not show

resentment at the restraint. Training is therefore a task which we share with the home. No demarcation of provinces can solve the problem, for demarcation is impossible. The schoolmaster must be a bit of a parent; a parent must be a bit of a schoolmaster.

The second mistake is the attempt to eliminate the parent. It is easy to see how educators have come to make the mistake. If every day children breathe foul air at home, it is little use their breathing fresh air at school; if the home diet for mind and body is every day unwholesome, then the wholesome diet of school is of little avail; if there are those at home who every day call evil good and good evil, who speak with scorn of the ideals which are the "suppressed premisses" (to use Martineau's phrase) of all school activities and institutions, then, indeed, it seems "The struggle nought availeth, the labour and the wounds are vain." It is like Penelope's weaving—the work that is done in the day is undone in the night. This adverse influence of the home is often the schoolmaster's chief obstacle, just as its goodwill is his chief ally. It is, therefore, not to be wondered at that many teachers, and those probably the most conscientious and high-minded, should have preferred to avoid this obstacle by accepting full responsibility of their charges, body, mind, and spirit, for the greater portion of their school life. It is an attempt to carry out the plan of Plato and let the philosopher rule. But it is, in spite of Plato's authority, unnatural—what Greeks would have called "a fighting against God." Whatever gain there may be to the child is more than compensated by the loss to the parents. There is nothing which can make up to them for that self-education that comes of responsibility for the training of others. Parents will be the better citizens for being the better parents. A human creature that has once fully realised the essential nature of the human relation, even though it be but to a little child in the narrow circle of the home, will be all the more competent to play his part in the larger circle of the city and the State.

The gain of co-operation to the schoolmaster is as great as to the parent. He cannot adequately know the child unless he knows its parents and its home. There is also the gain of a much more logical and potent disciplinary instrument which parental co-operation puts into his hand. The only sanction of discipline is love. That sanction in its purity and power is to be found only in the home. When school and home work together as partners in a common task, when one shoves while the other pulls, and both forces work consciously in the same direction, there must be inevitably immense gain to the influence for good.

This co-operation, so essential to the proper *condominium*, will not come of itself. Means and methods must be devised, and the more so at the present time, because the increasing specialisation of teaching means a constant change of teacher for the child and a loss thereby of personal influence; because, also, the organisation of education on a larger scale means inevitably more and more of the bureaucratic element, less and less chance of the

head knowing even his pupils, and the loss of knowing their parents and home.

The existing channels are the reports of the introduction of a pupil at his first entrance, necessarily cold, formal, and hurried, and the items of business that are "ticked off" every dozen. Such details as are noted are those of the hitherto attainments and the future prospects of the pupil who is entered. Reports are sent so that they be frequent, honest, not exaggerated, and dwell not too exclusively on the pupil's shortcomings. The class-lists issued, at least once a year, by the school always give a summary of the work the school is doing, especially in the form of a summary of the work done by each class. In Germany it is a common practice to circulate along with the class-list a reprint of some monograph or piece of research recently issued by the head-teacher or one of the assistants. I know German households with numerous sons that have accumulated whole shelves full of miscellaneous learning in this way. It was imposing, but it was unread. I do not think English schoolmasters are likely to follow the example of their Continental *confrères* in this matter; nor, if we did, would the shelves be so imposing. We are not professors, and rarely do we make any contribution to the sum of human knowledge. But we have our own ideas about education, and we have our own ideals, and it would be a really helpful thing if we were to circulate at the end of term some reprinted articles, whether our own or someone else's, which would give parents clearer and more intimate notions of what we aimed at and the why and the wherefore of our school institutions. I make this suggestion chiefly for the sake of the fathers, who cannot in any large numbers attend the prize-givings and other functions. I make it also because at these functions it is the more spectacular part of our curriculum which comes to view, and when the school choir with the orchestra have given their concert, when the gymnastic squad has given its display, when the classical side has presented its scene from Aristophanes, and the modern side its Molière, when the big gun has distributed the prizes, and has congratulated the recipients and exhorted the non-recipients, when the head teacher has summarised the result of the year's work and said how well he could do with another £15,000 endowment or a new chemical laboratory, or a swimming bath—when all is said and done, when "the tumult and the shouting dies"—I cannot help feeling myself that the real inwardness of the whole remains unexpressed; the still, small voice of the spiritual effort which is the real education has never had a chance to make itself heard.

Probably more valuable as an instrument of intercourse than all these outward and showier things is the commonplace satchel in which Tommy takes home his daily task for home preparation and what Tommy tells them at home about it. This gives parents of a day school, at any rate, the opportunity of daily insight into the method and working of the school, and, as I have suggested, it is only in the day school that the co-operation

can be fully carried out. The headmaster of Winchester's paper on this subject in the *Parents' Review* for August last shows how meagre and almost accidental that co-operation must be, even at its best, in the case of a boarding school.

There are two other suggestions that may be made. Mr. H. W. Eve, at University College School, and Dr. Findlay, at Cardiff, have shown how the tutor system can be applied to a day school, thereby securing for each pupil the continuous care and attention of one man through the whole of a boy's school-time. It is the duty of the tutor (or consulting master, as he is called at University College School) to know the parents and to visit them, and he thereby becomes a useful link between school and home. It is a system one would like to see extended. The frequent change of masters mentioned above, due to the promotion from class to class and the greater specialisation in teaching, will make some such system a necessity, if we are to keep up any attempt at moral guidance through personal influence. It is equally necessary in primary schools, though specialisation has not reached them yet; indeed, it is in the case of poor homes even more helpful to the teacher, for the drawing-room of the wealthier classes rather conceals than reveals the home in many cases.

But though this visitation of the home successfully establishes the personal link, it cannot give parents an insight into the working of the school as a whole, nor can it arouse their interest for the higher aims of training as it should be roused when the interests of education rest with the democracy. This aid may be accomplished by what the Germans call *Elternabende*, "parents' evenings," or as the scoffers call them, "mothers' meetings." They are in Germany the direct outcome of the Herbartian influence in education and they are found chiefly in Saxony and Thuringia, curious to remark, chiefly in connection with elementary schools. Prof. Rein gives a full bibliography of the literature on the subject, singling out for special mention a paper by J. Tew (*Deutsche Blätter für erziehenden Unterricht*, xx. 38). Mr. Thistelton Mark has described the institution as it exists across the Atlantic in his "Individuality and the Moral Aim in American Education," chap. x. Consultations are held from time to time between the parents and teachers of each grade, with a view to comparing notes. The parent gets to understand the teacher's end in view and the method adopted for attaining the end; he has plenty of opportunity after the consultations for separate interview with the teacher, and thus gets the benefit to a specialist's advice as to the characteristics and personal aptitudes of his child. Apart from this, some schools hold special classes for parents, reading Froebel, Pestalozzi, Comenius and standard educational works.

These things sound strange to us in England, but already at Parmiter's School Dr. R. P. Scott has shown how the institution can be adapted to our needs; and some such experiment should be especially valuable at the present time when secondary education is beginning to strike deeper

than ever it did before, and whole classes of parents are now sending their children to secondary schools without having themselves any clear idea what secondary education is. The aim of this article is to commend to English teachers an institution which in its ultimate effects, as it seems to me, may do much towards creating an enlightened enthusiasm in the public mind for the higher possibilities of education, and may open up a new source of upward power upon our pupils' lives that, whereas disunion now defeats the ends of both parent and teacher, so in the future co-operation may ensure success. Canon Skrine heads his chapter on Parents "A neglected Factor." The exploiting of this hitherto unused power is one of the tasks to which educational pioneers and inventors must turn their attention.

THE STUDY OF TENNYSON'S POEMS.

By LAURIE MAGNUS, M.A.

Author of "Words and their Use," "Introduction to Poetry," "A Primer of Wordsworth," &c.

LINES OF STUDY.

THE first thing in reading Tennyson—in trying to bring out, that is to say, the full disciplinary value, literary and moral, of his poetry—is to give reasons which will appeal to the pupil for commencing such a study. So long as the pupil believes that "Tennyson is rot," or that "poetry doesn't matter," no satisfactory work can be done. He must be led to believe, by evidence which appeals to him on his own plane of intelligence, that Tennyson is essential, and that, of all excellent things, poetry "matters" most. Convincing reasons must be stated to lead the pupil to open his Tennyson with some kind of appreciation of what he is to find there. This *leading*, which is education proper, is the function of the teacher. In order to bring the pupil to the right state of mind in which to begin reading Tennyson, fruitful use may be made of the following lines of thought:

I.—IT SHOULD BE A POINT OF HONOUR WITH US ALL TO RISE TO OUR OPPORTUNITIES.

"Men in great place are thrice servants: servants of the Sovereign or State; servants of fame; and servants of business" (Bacon, "Of Place").

One of you may be appointed to an important post: he will try to administer it justly, and to prove himself worthy of the confidence of those who set him there; to use his influence wisely; not to shirk his responsibilities; to recognise that *noblesse oblige*, that power means service, and that service has its own obligations. Another may inherit money; a third may inherit land: these, too, will try to make a good use of their inheritance; they will not waste it, or neglect it; they will rise, if they are not mean men and women, to the opportunities which are offered to them. Now,

certain opportunities are offered in common to us all. Religion is one of them, citizenship is another; others are the contents of the British Museum, of the National Gallery, sunshine, love, and art. To these inheritances, likewise, certain duties and obligations belong. The privilege of religious communion imposes a moral obligation. Patriotic duties attach to the blessing of citizenship. Sunshine demands cheerfulness. The power of love implies the restraints of loyalty and faith. Of course, we can run away from these things. We can renounce our inheritance, as it is said. But this is a mean thing to do, a cowardly view to take of life. We should meet life with open hands, gladly taking its gifts, and using them as best we can. It was a wise man who said, "One day we shall be called to account for all the good things which we saw, but which we did not enjoy."

II.—ENGLISH POETRY IS THE INHERITANCE OF ENGLISH BOYS AND GIRLS.

The point of honour having been established, the teacher has no difficulty in applying the general statement to poetry in particular. He represents poetry as an inherited possession. Among the good things which we ought to enjoy is our inheritance of poetry. Great poetry is one of the blessings which all of us share in common; and in the case of great English poetry, it is particularly the duty of the youth of England to learn to use what they inherit. There is a splendid list of poets, from Chaucer in the fourteenth century to Alfred Tennyson in the nineteenth—five hundred years of English history adorned by the writings of Englishmen. It would be a cowardly act, a sorry and foolish piece of laziness, to grow up in ignorance of that bequest; to let all that beauty, which belongs to us, slip away from our hands and hearts; wilfully to shut our eyes in the presence of so sublime a spectacle, or, if we open our eyes, not to take the trouble to appreciate it, not to rise to the opportunity of enjoying it. For taste in beauty requires cultivating; a sense of proportion is wanted; we must know the elements that compose it; we must learn *how* to see. This is the duty imposed upon us by our inheritance of literature. We have to cultivate the faculty of enjoying it.

At this point the teacher should be able to introduce some kind of general account of what is expected from poetry—of the advantage or reward of studying it. The precise language to be chosen must be determined in each instance by the age and class of the pupils. But, before the poems of Tennyson are set for study in detail, the pupil should be brought to know what aim or end they are to serve. The following suggestions are made for the concluding portion of this preliminary survey.

III.—THE RELATION OF POETRY TO LIFE.

Great poetry has this advantage over all other human labours: it comes nearest to truth. We

should always be jealous of the dignity of poetry. We, who are proud of our inheritance, who neither neglect it through indifference nor despise it through ignorance, should always be keen to assert its magnificent claim to a very real and an actual value in relation to the affairs of life. We should always resist to the utmost the far too common belief that poetry is an ornament—a kind of extra, as it were—adding culture and refinement, and a decorative fringe to knowledge, but yielding no gain or profit to the practical man engaged in ordinary business. Precisely the reverse is true. Poetry, as the truest expression of the deepest insight into life, is the most necessary form of knowledge, the study least to be neglected by all who care to know what is true, and real, and abiding in the shifting kaleidoscope of the world. We must have something to hold fast by as the things of this world rush past us. Our friends disappear, an accident removes them; our hopes elude us, ambition deceives; we grope in the darkness, and clutch at the wind; we climb to the heights, and fresh heights emerge; kings rise and fall; great peoples vanish; everywhere is change, everything is unexpected, everyone errs; and, in the midst of these shifting standards of judgment and knowledge, it is to the poets that we must look for the nearest utterance to truth—to the men who purposely retire a little way from the bustle of the world, who came down into the world as from a mountain, and the skin of their faces shone, and they brought in their hands a tablet of stone, on which their poetry was inscribed. The seer dies; for thirty days the people mourn him in the valley; the people vanish, or are dispersed; the valleys and the hills are moved: the one thing true is the writing on the stone, the one thing sure is the shining face:

The light that never was, on sea or land,
The consecration, and the poet's dream.

Let us grasp this truth while we can. The ordinary man does not know the forces that move a poet. He vaguely believes that a poet is an unpractical man, speaking an unnatural language. The further the ordinary man is removed from a share of the poet's insight the more he tends to regard the "seer" as a dreamer, and to look on his resources of metre, rhyme, and so forth, as artificial aids and appliances. But, though the brutish man knoweth it not, the fact is that the poets live the truest and the most real life, and they speak the most natural language. It is we who are unpractical and unnatural—we, with our broken sentences and our half-formed ideas; we, who are content to know only the surface of things, who speak and act without once possessing our soul, without once realising the truth that, behind our daily occupation, the petty round of our affairs, beyond the business of the market and the pleasure of the circus, there lies an unexplored world of beauty and truth, a world of complete satisfaction for the highest human capacity, a world from which we may derive courage, and hope, and faith to help us in this world we live in. For poetry—

let us be clear about this—is no mere ornament of life, no mere mechanical plaything invented for our amusement and our distraction. Poetry is life—life triumphant, life realised, life at its highest. Poetry that falls short of this standard is like an echo in a dream. Poetry that does not make for human excellence is an idol with feet of clay. The poet, like Jacob at Luz, consecrates the commonplace. He makes a Beth-el of every resting-place in his journey. He takes the stone and sets it up as a pillar, and pours oil on the top of it. And he says, "The Lord is in this place, though I knew it not." And he says, "This is no other than the house of God, this is the gate of heaven." All forms of human expression—all tongues, whether of science or art—at their best only come near to truth. We can never in this life tell the whole truth, all the truth. Life, and death, and love, sunrise, and the movements of the planets, the functions of the body, the operations of the mind, memory, prophecy, identity—there is a mystery about these things, even for the most learned man, and even for the most ethereal child. Earthly knowledge is edged with mystery; it is a country with an unknown hinterland. All truth on earth is approximate; no knowledge is full, save of those who, in the figurative language of the Old Testament, see God face to face; but the poets come nearest to that truth and knowledge, and it is in this spirit that they are to be consulted.

"Poetry," said Wordsworth, "is the breath and finer spirit of all knowledge; it is the impassioned expression which is in the countenance of all science." "Poetry," said Shelley, "redeems from decay the visitations of the divinity in man." "Poetry," said Emerson, "sounds rather as if copied out of some invisible tablet in the Eternal mind than as if arbitrarily composed by a poet."

These are high claims to make, and it may, perhaps, be objected that Wordsworth, Shelley, and Emerson—and Matthew Arnold, who might be added—were themselves poets as well as critics, so that their views are not impartial. But we may quote the testimony of John Stuart Mill, by no means a poetical writer, who said of the poems of Wordsworth: "From them I seemed to learn what would be the perennial sources of happiness when all the greater evils of life shall have been removed; and I felt myself at once better and happier as I came under their influence." These "perennial sources of happiness" are precisely the edging of mystery to which reference was made above. Surely it is worth while to seize these permanent parts of human knowledge, these elements which reconcile and unify the rest, which give glimpses, however dim, into the final aim of all existence, the causes why we are here, the purpose which our life fulfils, the single end which it serves through all the ceaseless changes of suffering humanity:—

One God, one law, one element,
And one far-off, divine event,
To which the whole creation moves.

—Tennyson ("In Memoriam," last lines).

The knowledge of poetry is a science of sciences,

a key to the understanding of life. In poetry are contained all the other studies and their branches, and more than them all; for the language of poetry expresses more clearly than any other tongue the meaning of the riddles of existence. All learning is a wooing of truth, poetry kisses its skirt; and if this is true of poetry in general, it is particularly true of Tennyson, as a study for English boys and girls. Not by any means because the poems of Tennyson are greater or better than those, say, of Shakespeare, Milton, Goethe, or Dante. Poetry is not judged by a competitive standard; it serves no purpose of criticism to ask, who is greater, this poet or that? When once we have made up our minds that poetry is a serious study, to which we are bound to apply ourselves if we are to rise to the opportunities of life; then the question of *what* poetry to study—especially what poetry to study first—is determined on quite other grounds than the comparative merits of the poets, even if such comparison could be made. No; the reason, briefly, is this: Tennyson holds for us the explanation of our own times; his poems, properly considered, are a map of our world; a guide and a clue to the problems which hem us in on every side—problems of action, problems of emotion, and most of all, problems of conduct, which are composed in equal parts of both.

The teacher, as has been said, must judge for himself how much of the foregoing section is suitable to his pupils. Something of the kind they will require, some intellectual stimulus to give them what the Germans call the *Orientierung* of poetry—the points of the mental compass when Parnassus is explored. They must not go to Tennyson as to a lesson-book without being guided to realise *what* poetry is, and *why* it is made. The teacher may here be referred to Matthew Arnold, "Essays in Criticism," second series, "The Study of Poetry," "Wordsworth"; W. J. Courthope, C.B., "Life in Poetry, Law in Taste"; Canon Beeching, "Two Lectures introductory to the Study of Poetry"; C. T. Winchester, "Some Principles of Literary Criticism" (New York, Macmillan); and to L. Magnus, "Introduction to Poetry."

IV.—Arising out of what was said above, that "Tennyson holds for us the explanation of our own times," the teacher should now be able to interest his pupils from this point of view, as a particular instance of the relation of poetry to life.

TENNYSON AND THE NINETEENTH CENTURY.

Another reason for reading Tennyson is this: Tennyson lived in the times of our fathers and mothers. He was born in Lincolnshire in 1809, he died at Haslemere, in Surrey, in 1892. Thus, except for eight years at the beginning and for another eight years at the end, the span of his life coincided with that of the nineteenth century. More particularly, it coincided with the Nineteenth Century writ large: with that period of history, that is to say, less than a hundred years in length, which opened in Europe at the end of the era of the French Revolution, and which closed, within

the memory of most of us, at the time of the expansion of political thought between the first and second jubilees of Queen Victoria. The dates cannot be fixed quite exactly, but between 1832 and 1887 there lies a period of tendencies and experiments in politics, literature, and society which can be considered as a whole. It lies between the shadow of Napoleon and the dawn of the era of trade, between the wars of aggression and the no less bitter warfare of competition. We may render homage to our great Queen by describing that period as the Victorian Age, or we may call it simply the nineteenth century; the point is, that the period immediately preceded our own; we are the children of its spirit, our parents lived in it and made it, through its spirit we exist. What is the spirit of the age—the *Zeitgeist*, as the Germans call it? We cannot study it more fruitfully than in Tennyson's poems, for Tennyson grew to manhood as the era increased to its zenith, and he sank to rest as the new age rose in its place.

This, in itself, gave the poet an immense natural advantage. It gave him Shakespeare's spectacles, the Shakespearean outlook on human happenings and progress. If a great man's lifetime corresponds with a definite period of history his work is sane and uniform, his sense of proportion is satisfied, the limitations of knowledge hardly irk him, and he quits the world with contentment.

This statement of the happy life may be illustrated (if the teacher chooses) by a contrary example. England's sorrow at Queen Victoria's death was deepened by the feeling that she had lived a year or two too long. The dawn of the twentieth century—the age of political and of economic reconstruction—made a strange twilight at the evening of her days and broke its rounded peace.

Tennyson escaped that fate—the fate of survival into a new age—by five or six years. In 1892, when he died, the Diamond Jubilee, which struck a new Imperial note, was still at a five years' distance. Mr. Gladstone was alive, Home Rule was still a force in politics, Mr. Chamberlain was not yet at the Colonial Office, and it was not till 1899 that the war broke out in South Africa. A whole epoch of British history was unwritten at the time of the poet's death. As Mr. Amery writes in the *Times* "History of the War in South Africa," "it required the touchstone of a great war to make the Empire feel its unity." The truth of this proposition is illustrated now every day by facts and proposals outside the limits of this survey. For us, it is enough to note that Tennyson represents the nineteenth century in England. His is the master-voice of its ripe and gathered experience. Through him they speak, though dead—the men and women whom we mourn. He is thrilled by their hopes and fears, his poems shine with their ideals; we must know him if we would know them.

(To be continued.)

THE next annual meeting of the Geographical Association will be held on January 6th, 1905, at 4 p.m., at the Royal Colonial Institute, Northumberland Avenue, London, S.W.

A PLAN FOR AN ELEMENTARY SCIENCE LABORATORY AND DEMONSTRATION ROOM.

By R. WALLACE STEWART, D.Sc. (London).

Science Organiser to London Education Committee.

A SATISFACTORY plan for a laboratory and demonstration room for practical instruction in general elementary science is, in these days, an important requirement in the general plan of a secondary or higher elementary school. The arrangement of a satisfactory plan is a matter of some difficulty, for, while it is necessary to provide all the essential requirements for demonstration and for elementary practical work in both physics and chemistry, it is also necessary to avoid over elaboration in fitting and equipment, and to keep the cost as low as possible.

The following points which have presented themselves to the writer in attempting to think out a suitable plan for a general science room may therefore be of some general interest.

If the arrangement indicated in Fig. 1 be taken

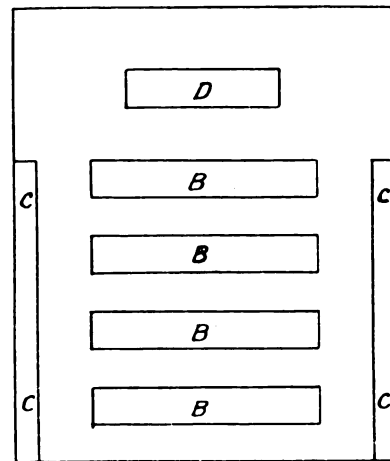


FIG. 1.

as the starting point of a satisfactory plan, some general results may be deduced as to the best dimensions to be adopted in order to secure economy of floor space. The working benches B B B B are single benches facing the demonstration table D. The wall benches C C are slate shelves cased over to carry the balances which are, in this way, so placed that the scholars in the right and left halves of the benches may conveniently use the balances in the right and left cases respectively. In this arrangement there are certain dimensions which are fixed within comparatively narrow limits. These limits are shown in the plan of Fig. 2 and give the following initial dimensional data:—

The distance A B is 10 feet.

The sum of the distances C D and E F is 10 feet.

The dimensions of a working place, *a b c d*, are 5 feet × 2 feet 6 inches.

From these data it is possible to deduce the best arrangement and dimensions for this particular plan. If the space outside the working area P Q R S (Fig. 2) be taken as "waste" space, the relative advantages of different arrangements may

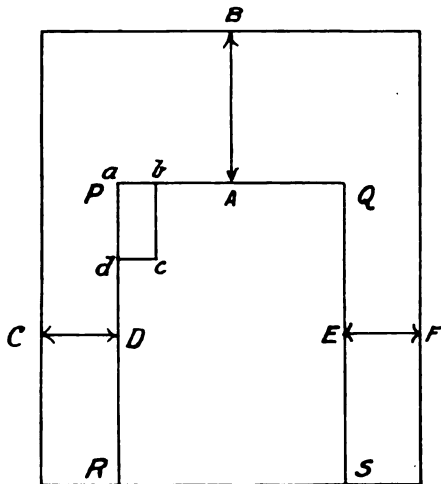


FIG. 2.

be compared by comparing the areas of "waste" floor space per working place in each case. Suppose the arrangement is that of n benches each providing m places, then the area of the "waste" floor space per working place is $(25/n + 50/m + 100/mn)$ square feet. This area is evidently decreased by increasing m or n , and therefore the greater the number of places the greater the economy of floor space. Further, if, with n benches of m places each, the length of each bench is increased one place length, n additional places are provided at the cost of an increase of $25/n$ square feet of waste space per place. On the other hand, if the number of benches is increased by one, m additional places are provided at the cost of an increase of $50/m$ square feet of waste space per place. In each case the increase in accommodation is an economy of floor space; but it will be seen that, if m is less than $2n$, it is best to increase the length of the benches, but if m is greater than $2n$ then it is best to increase the number of benches. This indicates that the best arrangement is that for which $m = 2n$. This result is perhaps most simply evident from the consideration that, from any number of places, $m n$, beginning, say, with m small and n large, economy of space is affected by increasing m and reducing n until $m = 2n$.

Hence, for this particular plan, and with the initial dimensions here taken, it may be stated:

(a) That the arrangement most economical of floor space is that in which $m = 2n$.

(b) That the economy increases as $m n$, the number of places, increases.

There are, however, at least two considerations, arising out of the arrangement of the plan, which set a practical limit to the value of $m n$. In the first place, the number of balances available for each bench is four, and therefore there cannot well be more than eight places in a bench. Secondly, beyond a certain limit, the space in front of the benches on each side of the demonstration table cannot be satisfactorily utilised. Although the arrangement where $m = 2n$ is theoretically the best for $m n$ places, it will be seen that any arrangement approximating to this is nearly as good. For example, for twenty-four places an arrangement of four benches, each of six places, is practically as good as the impossible theoretical one.

For this type of plan, therefore, the following arrangements are suitable and economical of floor space:—

	No. of Benches.	Places per Bench.	No. of Places.	Dimensions of Room.	Floor space per place. (sq. ft.)	"Waste" floor space per place. (sq. ft.)
1	3	6	18	25 ft. x 25 ft.	35	23
2	4	6	24	30 ft. x 25 ft.	31	19
3	4	8	32	30 ft. x 30 ft.	28	16
4	5	8	40	35 ft. x 30 ft.	26	14

The second and third arrangements, providing places for twenty-four and thirty-two scholars respectively, are evidently the most suitable for ordinary class work.

For any of these arrangements some elaboration of the initial simple plan is desirable. The distance between the benches may, with advantage, be increased to three feet, and the length of the room should be increased so as to give space at the back for a bench fitted with gas and water and

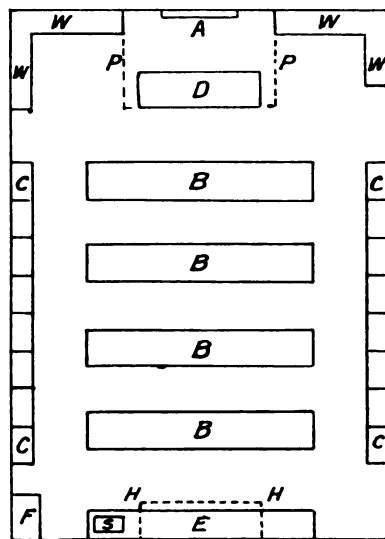


FIG. 3.—A. Blackboard, &c. WW. Wall space for storages, Cupboards and Wall apparatus. PP. Platform. E. Bench for general apparatus. HH. Hood over part of E. S. Large sink. F. Blowpipe bench.

* The best value of the ratio m/n is evidently determined by the dimensions of a working place. As a general rule, when $A B = C D + E F$, we have $m/n = \frac{ad}{ab}$ (Fig. 2), but if $A B$ be denoted by x and $C D + E F$ by y , then the general result is $m/n = y/x \cdot \frac{ad}{ab}$.

suitable for work of a general character. The available floor space round the demonstration table has also to be planned out for the accommodation of storage cupboards and wall apparatus. These changes in dimensions will involve a slight change in the best value for m/n . If $5\frac{1}{2}$ ft. \times $2\frac{1}{2}$ ft. be taken as the dimensions of a place and if $2\frac{1}{2}$ ft. be added to the length of the room, then the best value of m/n is $44/25$, that is, m must be rather less than $2n$. Hence the second and fourth arrangements for twenty-four and forty places respectively are most suitable to these revised dimensions. The plan given in Fig. 3 indicates, on these lines, a satisfactory arrangement for twenty-four places. The revised details for this room are:—

No. of Benches	Places per Bench.	No. of Places.	Dimensions of Room.	Floor space per place.	"Waste" floor space per place.
4	6	24	35 ft. \times 25 ft.	(sq. ft.) 36	(sq. ft.) 22

Where provision has to be made for practical work in both chemistry and physics the design of the working bench is a most important item. A simple table bench, without water laid on, costs little, and, as its width need not exceed 20 ins., it is economical of floor space. It is, however, very inconvenient and necessitates the provision of a bench supplied with water (and fitted with sinks at points opposite the spaces between the working benches) in place of one of the balance cases. Experience goes to show that wherever it is possible to make the provision it is worth the extra cost in money and floor space to provide the benches with water and gas. Figs. 4 and 5 indicate the details of a

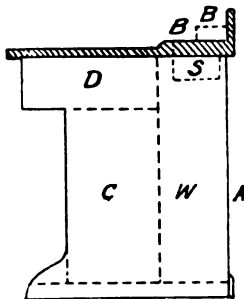


FIG. 4.—D. Drawer space. C. Cupboard space. W. Space for Gas and Water supply, and Waste system. A. Doors giving access to W. S. Sink. BB. Shelves.

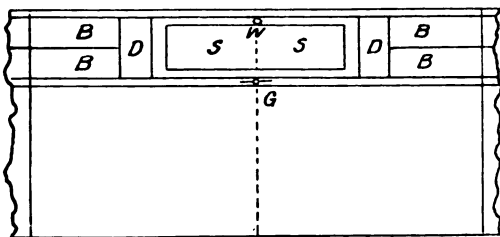


FIG. 5.—BB. Shelves. SS. Sink W. Watertap. G. Gas. D. Small Drawer.

bench suitable for this purpose. The width of the bench is kept as small as possible by the use of long narrow sinks, and the general arrangement of

the water and gas supply is simple and comparatively inexpensive. Fig. 4 shows an end view of the bench top for two places, and Fig. 5 is a sketch of the front of the bench. From these two figures it will be seen that the front portion of the top, for a width of 20 ins., up to the bevelled edge shown in Fig. 5, is quite clear for use as a bench for physical experiments, while the back portion, 10 inches wide, contains the sinks and is simply fitted with the accessories necessary for chemical work. The cost of the bench will of course depend upon the extent to which it is fitted with drawers and cupboards, but if drawers are omitted the cost comes within very reasonable limits. If simple table benches, 20 inches wide, are used, then the dimensions of a working place may be 30 in. \times 50 in., and for economical spacing we should have $m/n = 4/3$. Hence, with these benches, suitable details for convenient laboratories would be—

No. of Benches.	No. of places per bench.	No. of Places.	Dimensions of Room.	Floor space per place.	"Waste" floor space per place.	
1	4	5	20	30 ft. \times 22 ft.	(sq. ft.) 33	(sq. ft.) 23
2	5	7	35	34 ft. \times 27 ft.	27	17

It will be understood that the treatment here adopted to determine the "best" arrangement of benches for a particular type of plan may be applied to any general plan taken as a starting point.

THE ARRANGEMENT AND EDUCATIONAL VALUE OF SCHOOL CONCERTS.

By ARTHUR H. PEPPIN, B.A.

Organist and Director of Music in Clifton College.

A SCHOOL music-master who is trying to make his art an element in school life will find in school concerts, in most cases, a useful weapon ready to his hand. The object of this paper will be to set forth a few practical hints as to the manner in which this weapon may be most effectively used.

In the first place, it will be well to bear clearly in mind a somewhat obvious distinction involved in the term "educational value." It is possible to use the words "musical education" to mean either the training in the *technique* and science of music of one who is meant to be a performer, or the training of one who has no desire to be a performer in the understanding and appreciation of the art. School concerts can be used to further both these forms of musical education, but it will be well, in their arrangement, to keep in mind the distinction between the two functions. In practice they will largely overlap; for instance, a piano or violin recital given to a school will be at once a lesson to the piano or violin pupils in the *technique* of their instrument, and a lesson to all in musical appre-

ciation. The adequate performance of one of Handel's choruses by a school choir may tend to foster an admiration for Handel's choral writing in all the listeners, whilst the intimate knowledge of the chorus which the performers must have acquired will have been a valuable education in taste to all of them. In reading the remarks which follow it will be necessary to bear in mind this overlapping of functions.

With the modifications, then, demanded by varying conditions and circumstances in different schools, it will be desirable so far as possible to arrange, from time to time, concerts of two classes, A and B:—

A. Concerts given by pupils to their fellows.

B. Concerts given to the whole school by mature and finished performers.

The main object of Class A will be the musical education of the performers, though it should also cultivate interest and appreciation in all.

The main object of Class B will be the cultivation of interest and appreciation in all, though it will also be an assistance in the musical education of young performers.

The ways in which concerts of Class A can be made useful in the education of those who perform are so obvious as hardly to need mention. The chance of playing at a concert is usually a stimulus to practice, and in every well-regulated school the honour of representing the school in music should appeal to many boys as worth striving for as much as the honour of representing it in cricket or football. The advantage of this stimulus may be developed to the utmost by announcing to several pupils early in the term that a selection of performers at the next school concert will be made from among their number, and that the choice will fall upon those who have the most suitable term's work to show.

Again, it is very desirable, if possible, to produce some specimens of *ensemble* playing at a school concert. Encouragement may thus be offered to pupils to practise instrumental duets, trios and quartets together, giving them a taste for the highest classes of music which will probably cling to some of them through life. Cases have been known where four boys have met together, entirely of their own initiative, and practised regularly a movement of a string quartet, with the intention of offering it for performance at a school concert. In these cases the benefit to the listeners was, no doubt, considerable, whilst the educational advantage to the performers was simply incalculable.

It is further to be borne in mind that music is, in a special sense, a social art. A large part of the pleasure which it can give is a sympathetic accord between performers and listeners. Real joy having been found in the study of a work of art, a natural and human impulse is the desire to communicate that joy to others. The gratification of this desire must evidently tend to a development of the highest form of social instinct. The opportunity of such an experience may be made a legitimate ground for encouraging a pupil to serious work, and its enjoyment may properly be repre-

sented as a high privilege and a genuine distinction.

But, whilst bearing these points in mind, there are cautions to be observed. There is the danger of giving way to the prevalent sensationalism in the matter of juvenile prodigies. This should be carefully shunned. It is obviously undesirable that a gifted young boy should be put into a position where he is likely to attract notice and attention. The story is told of a famous cathedral organist and choir-trainer of the old school that, whenever his solo-boy had sung a solo in an anthem particularly well, the reward was a severe thrashing. This was perhaps carrying the reverence due to boyhood rather to extremes; but evidently, if the story is true, the old gentleman had a sound appreciation of the dangers to character liable to spring from putting a young boy into a position where his gifts were likely to attract admiration. It would generally be better to avoid putting the youngster into such a position, and to spare him the thrashing. So it is desirable, as a rule, to reserve the honourable distinction of a solo performance at a school concert for pupils who have won it by a considerable period of serious work, and to resist the temptation of the more sensational success which may sometimes be won by juvenile precocity. This point needs special emphasis in the case of vocal performances, because here the success can be gained at comparatively slight cost of labour and effort, with far less artistic insight, and with an appreciation which is as much more intoxicating as it is less intelligent. As a general rule, therefore, treble solos from boys, if admitted at all into concert programmes, should be admitted with the utmost caution.

The suggestions and cautions so far given refer chiefly to the performers at a school concert, but the listeners should not be forgotten. The programme should be drawn up with due regard to variety, interest and attraction. A concert which is successful from the point of view of the audience may help to train them as listeners, and may also do a good deal to increase the *prestige* of the school music—an extremely important advantage. The natural tone of an English public school may be healthy and strenuous, but the most thorough-going upholder of our education system will hardly maintain that it is artistic. Any institution, therefore, which may tend to modify the Philistinism of the youthful Briton deserves commendation, and an increase in the *prestige* of music throughout a school must be a powerful influence in this direction.

But, valuable though concerts of Class A may be as a help towards a general improvement in taste, it is likely that performances of Class B may be even more potent in this direction.

It cannot be too strongly insisted upon that one of the most important duties of a school music-master is to train listeners. It is most undesirable that his influence should be limited to the comparatively small number of those who learn instrumental music and who sing in the choir. He should regularly set himself to create throughout

the whole school a respectful appreciation and a genuine love of his art. To this end he will find concerts of Class B, properly made use of, a most powerful aid.

In some schools the resources, pecuniary and otherwise, will make possible the periodical arrangement of thoroughly good orchestral concerts of classical music. In others, where this is impossible, such performances can generally be arranged as chamber concerts given by professionals or good amateurs, or piano and violin recitals given by the music-masters themselves. In all cases the programmes should be of a very high class, but varied and attractive.

The criticism will, of course, at once be made that it is unreasonable to expect a miscellaneous crowd of schoolboys to listen patiently to a concert of classical music. We will discuss this criticism, and let it be guaranteed at once that no statement shall be made in the following remarks which has not been carefully tested and verified by repeated experiment.

It must undoubtedly be admitted that to force a whole school into a concert-room and there to make them listen for an hour and a half, without any preparation, to a programme of classical music would be to court failure. The same would hold good in the case of a corresponding audience of adults. We should get a sort of parody of "Holy Cross Day" in Rome, as described by Browning. But a very different result can be brought about by quite simple means. If the programme is selected with reasonable care and forethought, all that is necessary to get the ordinary run of boys to appreciate and enjoy music of the highest class is a certain degree of familiarity with it. This familiarity can be procured by giving, say, once a week for a month before the concert informal performances at the piano of the principal themes and "tit-bits" of the pieces which are to be heard at the concert. If these preliminary performances are made reasonably pleasant and attractive, a great many boys will attend them with eager interest. They will get to know the themes well, their interest and expectation will be aroused, they will come to the concert-room with keen anticipation, and the result will probably be that the concert will be a brilliant success. By these simple means it has been brought about that the 500 boys forming the audience at a large public school have encored a movement of a Beethoven Symphony, and compositions by Bach, Wagner, and Brahms, with absolute unanimity and the utmost enthusiasm, and conversions to the cult of the best music have been numerous and complete, with results that must obviously be of far-reaching value. It cannot, then, be too strongly insisted upon that familiarity with good art is bound to produce, in all but a few exceptional cases, a love for it, especially in the case of young people, who are naturally and healthily susceptible to enthusiasm. If the results thus indicated are not immediately attained in their completeness, persistence is bound to bring them about in the long run, and the school music-master who thus persists

will have the satisfaction of knowing that he has dealt a sound blow at British Philistinism, and done an effective piece of work towards improving the national taste.

FIRST PRINCIPLES IN GEOMETRY, WITH SUGGESTIONS FOR AN ORDER AND A SYLLABUS.

By E. BUDDEN, M.A., B.Sc.
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ALTHOUGH the broad lines upon which the teaching of geometry is to be carried on have been satisfactorily settled, nothing has so far been done to establish a logical order of the subject based upon a comprehensive scheme of definition. We can scarcely hope for any real general improvement in the subject as a means of education until some satisfactory settlement is arrived at on these vital points.

The primary definitions are those of plane, straight line, angle, parallels, and ratio.

PLANE AND STRAIGHT LINE.—Euclid assumes¹ *explicitly* that a straight line exists through any two points, infinitely producible and unique in position, and also that there exists a surface (the plane) containing the join of any two of its points. Now whilst the plane cannot be deduced from these properties of the straight line, intersecting straight lines give no results without the plane. Again, the plane may be defined independently by the congruence, two and two, of any three planes or parts of a plane;² but this does not give (independently) the straight line as the intersection of two planes.

It seems clear, therefore, that the straight line and plane, though capable of independent definition, are really interdependent, because the definitions, though sufficing as tests to separate the straight line and plane from other lines and surfaces, fail independently to give the properties of intersecting lines or planes. It is important to distinguish a real definition from a mere test; a sphere turned in a lathe is tested by a calliper, but its definition by this test would not lead directly to its fundamental property.

Euclid assumes further, *implicitly*, in I. 6 (equal angles in a triangle subtend equal sides), that *a straight line can be reversed upon itself*. This fact is fundamental, and necessary for a proof of the theorem, but it is not axiomatic. If a line AB is turned over to bring A on B and B somewhere along the line, it is not at once obvious that B comes on A. This can, and should, be proved. It is, in fact, a new principle deducible from the properties *explicitly* given.

Two further assumptions are *implicitly* made in I. 4 and 5 (congruent and isosceles triangles);

¹ Excluding the parallel-axiom.

² Whitworth's test of a plane; said to have been suggested by Laplace.

that two planes coincide when three non-collinear points coincide, and that an angle can be reversed—*i.e.*, that the two faces of a plane angle are congruent. These principles again are necessary, and they are not axiomatic, but may be deduced from the properties explicitly given. It is most important to notice that no proof of I. 5, or 6, no complete proof of the congruence of two triangles, and no *geometrical* proof of I. 15 (vertically opposite angles) can be given without using the reversibility of the plane, straight line, and angle. Their proofs cannot be derived by the use of one side of the plane only (translation and rotation); if they could, two spherical triangles with three elements equal, but of contrary aspect, would be congruent.

The want of attention to this principle of reversibility invalidates almost all the first links of Euclid's chains of theorems. It also obscures the true meaning of bisector of angle and perpendicular. The primary bisector is the line about which one part *turns over* on to the other; from this the secondary bisector of rotation can be derived, whereas the reversible bisector cannot be derived from the rotational. The perpendicular in the same way is the *reversible* bisector of a straight angle, and is almost invariably used as such, as in the isosceles triangle and circle.

We easily illustrate the principle of reversibility of the plane, &c., just as we illustrate bisectors or symmetrical figures, by *folding over* a sheet of paper. A plane is the only surface reversible in this way about any two points, and a straight line is the only kind of line about which a surface can be reversed, so that we have straight line and plane associated in this process of reversing. The straight line is clearly an axis of rotation, but probably the idea of a fold is easier for beginners. It is here, I think, that we must look for a definition of both plane and straight line.

Again, by turning over we establish the symmetry of the isosceles triangle and circle, without the aid of congruent triangles; but the complete cases of congruent triangles cannot be established without the use of the symmetry of the isosceles triangle or circle. Symmetry, as a process, is therefore antecedent to congruence (turning over precedes plane rotation and translation). As the properties of similar figures derive ultimately from the parallelogram, which derives from congruent triangles, we have the complete *logical order*,

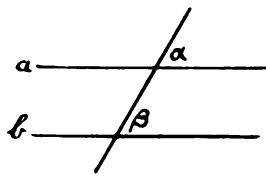
SYMMETRY, CONGRUENCE, SIMILARITY. It is now—rightly, I think—agreed that parallels shall come very early, and the area of the parallelogram not very late. In other respects than those above mentioned, order is largely a matter of taste, the proofs being practically the same with any order.

ANGLE.—The supposed difficulty in the definition of angle has arisen from an attempt to define angle as a *magnitude* instead of as a *figure*, the old "inclination" or "opening" being now often replaced by "amount of rotation."

Now we can only tell what fraction of a complete (plane) turn an angle is by seeing *how its*

plane figure repeats into the complete turn. Logically the mistake is a *ἕτερον πρότερον* of the same kind as defining straight line by "amount of length" or of uniform motion, which are the kinds of magnitude measured by the *figure* of a straight line. It is the *plane figure* of an angle that measures the amount of rotation, and it is only by the coincidence of two such figures that we know that two plane rotations are equal. Euclid I. 15 proves that opposite angles at a point are *congruent*. The proof of this by mere rotation involves us in this dilemma: *either* we measure the angles, say on a circle, and are then involved in the difficulties of incommensurables and limits, and the simplicity of the proof—its only merit—disappears, *or* we argue in a circle, since we can only prove that the rotations of opposite parts of the rotating line are equal by showing that the plane figures of their angles are congruent. And the mere rotation proof of I. 32 (angles of a triangle = 2 right angles) can be applied, *mutatis mutandis*, to prove that the three angles of a spherical triangle are equal to two right angles. Thus the rotation definition of angle is clearly useless for proving the fundamental theorems. It is, moreover, entirely contrary to the spirit of modern geometry, which treats the subject by means of figure only, without mensuration.

PARALLELS.—The definition of parallels is twofold. If the angles α , β in the figure, made by two lines a , b with a third, are unequal, Euclid says



that a , b are non-parallel (*i.e.*, they meet), in addition to defining parallels as lines that do not meet.

The modern definition of parallels as lines that make $\alpha = \beta$ is undoubtedly the right one, but it is insufficient unless made twofold; we ought to define lines as non-parallel which make $\alpha \neq \beta$; we can then deduce all the necessary theorems. There is, however, the special difficulty of proving that non-parallel lines meet; this is not axiomatic, and, though difficult, it ought to be proved.

RATIO.—Owing to Euclid's unfortunate derivation of proportional division of lines from the ratios of areas, it has not been generally recognised that the Sixth Book consists of two quite distinct sets of properties.

Euclid VI. 2 . . . 18, 20 (first part), 21, 24, 26 . . . 32 are geometrical. If Z is a length absolutely invariable, and W determined by the ordinary construction for a fourth proportional to Y , X , Z , we can define the ratio X , Y as W , and we can prove that W is unique when X , Y are given, without the aid of number. We readily

¹ Independent, that is, of the theory of parallels.

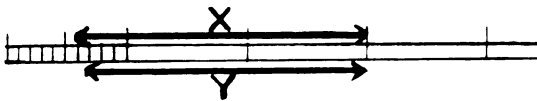
derive all the above properties. These, then, belong to geometry of figure or of position.

On the other hand, Euclid VI. 1, 19, &c., are mensurational, and require the use of number to express relations of areas to lengths. Numerical treatment is also required for trigonometry, algebraic geometry, and applied mathematics generally, and is, I think, easier for the beginner than the purely geometrical. But the above distinction is an important one in the construction of a syllabus, as the first set of properties (proportional division) offers no greater difficulty than Euclid's First Book, whereas the second set presents the same kind of difficulty as his Second Book, which it logically follows.

The proposal of examining boards to accept proofs for commensurables only is most unfortunate, because we *must* use incommensurables in the geometrical construction of a square root, and of trigonometrical ratios (s in 60° , &c.); and in the equation of a straight line $ax + by + c = 0$, some values of x and y must be incommensurable. It is only by finding simpler methods of meeting the difficulties, not by ignoring them, that we can hope to improve our teaching. Moreover, the proposal is contrary to the tendency of modern arithmetic, which rightly aims at one mode of expression for all numbers, by decimals; whereas a separate treatment for commensurables divides numbers sharply into two sets. There is a special disadvantage, generally overlooked, in expressing ratios by fractions p/q , viz., that the ratio appears as *two*, and is read as two (p over q) instead of as one.

The difficulty is most easily met by supposing magnitudes to be measured by decimals, and regarding every decimal, terminating or infinitely continued, as representing a number.

Numbers were originally derived by measuring magnitudes in terms of a given unit, and a number μ is defined as greater or less than ν , according as the magnitude measured by μ units is greater or less than that measured by ν units. As the unit is arbitrary, this is equivalent to saying that $\mu \geq \nu$ according as $\mu Z \geq \nu Z$, where Z is any magnitude.



Two magnitudes, X , Y , may be measured by a decimal scale,¹ showing tenths, hundredths, &c. If an end of X coincides with one of Y at a unit division, their other ends will be separated by some scale divisions, unless $X = Y$. So that the measures of unequal magnitudes, *i.e.*, unequal numbers, are represented by different decimals, and equal numbers by the same decimal.

The fundamental theorems of proportional division and ratios of areas are readily derived, commensurables and incommensurables being treated by one process. The method is easily

developed algebraically to prove the laws of operation of irrational numbers, indices, and logarithms. Alternando¹ is a mere case of the commutative law $\mu\nu = \nu\mu$, and geometrically of the rectangle theorem (rect. of extremes = rect. of means).

SYLLABUS.—It is now a simple matter to suggest a broad syllabus of the subject.

(i.) The easier part. Euclid I., III., IV., VI. 2 . . . 18 (proportional division), with, say, approximative numerical treatment of areas and simple solid figures.

This should, I think, take the place of the old Euclid I.-IV. and VI.

(ii.) The harder part. Euclid II., VI. 1, 19, &c., the exact mensuration of plane areas, trigonometry (geometrical), solid geometry, conics, and modern geometry.

The advanced part of trigonometry (DeMoivre's theorem, &c.) should form part of the course of higher algebra, as it really belongs to the theory of complex number rather than to geometry. Euclid II., VI. 1, 19, &c., might be taken with trigonometry to solution of triangles.

The great difficulty, however, will be to find a satisfactory subdivision of (i.). My own view is that proportional division should take the place of the areas at the end of Euclid, Book I., as it is so important for constructions, and simplifies the proofs of important theorems of the triangle (medians, perpendiculars, &c.).

I should like to suggest that boys should be allowed to offer elementary trigonometry and mensuration in place of arithmetic in the Locals and qualifying examinations generally. This would be a great boon to teachers who try to take their boys on to higher work.

Is it too much to hope that the universities may, in the course of a year or two, come to some agreement as to a logical order and syllabus?

"UNSEENS" IN ENGLISH LITERATURE.

By W. MACPHERSON, M.A.

University College of N. Wales Day Training College, Bangor.

THE object of this paper is to describe a practical device that the writer has found to be of considerable value in the teaching of English literature. This device consists in the occasional setting of "unseen" examination papers in the subject. As so much has been heard lately regarding the abuse of examinations in schools, it might seem at first sight as if such a plan, especially when proposed in connection with the study of literature, were out of harmony with sound ideas of aim and method in teaching. Little doubt, indeed, can exist in the minds of most teachers that the prevalent examination system is often productive of evil consequences. At the same time, it will be admitted that there is a great diffe-

¹ Used in the general sense, to apply to any kind of magnitude.

¹ The difficulty of Euclid's method is well illustrated by his chain of eight theorems to prove alternando.

rence between the setting of an examination paper for competitive purposes and the setting of a class-paper for which no prescribed work is required and for which no marks are given, which, too, merely forms a test of how far a teacher's method has been successful and of the extent to which his pupils individually have benefited by it. The first-named class of examination frequently leads to overstudy and overstrain on the part of the pupil; the second is merely a written exercise, a useful and almost necessary complement to method.

In connection more particularly with examinations in English literature, it is sometimes argued that it is impossible really to examine in this subject—that, even if questions may be set on the biographies of authors, on the dates and places of their births, on the incidents of their lives, on matters of fact generally, yet upon literature in the true sense, upon matters not of fact, upon the finer qualities of literature, it is impossible to examine.

In reply to this objection, it must be admitted that an examination in literature will never be completely satisfactory—no examination in any subject ever is—but to admit this is not to say that it will be altogether valueless. Rightly conducted, it may produce excellent results. The writer ventures to instance the following as specimens of questions that might profitably be set in an "unseen" paper in English literature, believing that the answering of them would necessarily imply the exercise of a certain amount of valuable original faculty by a pupil. It need hardly be premised that the particular questions here given might not be adapted to the methods of every teacher; in the setting of such "unseens" each teacher will frame for himself questions that shall be consonant with his methods. Again, obviously the difficulty of the questions set should vary with the age of the pupils. Questions that involve a sense of the niceties of language or a more developed power of perception and reasoning (like Nos. 1 and 9 in the paper below) would be set to older pupils, from the age of fifteen or sixteen upwards. On the other hand, an explanation of easy passages, such as No. 4 below (from Blake), might be asked from younger pupils. The writer has found that good results may be obtained from the setting of "unseens" to pupils from the age of twelve or thirteen onwards.

It will be noted that each of the questions that follow consists of a passage quoted from an author, in connection with which the pupil is asked to explain various points:—

(1) "Hamlet," Act I. Scene 1. *Elsinore. A platform before the Castle.*

Francisco on his post. Enter to him Bernardo.

Ber. Who's there?

Fran. Nay, answer me; stand and unfold yourself.

Ber. Long live the King!

Fran. Bernardo?

Ber. He.

(a) What may we infer from Bernardo's opening question, "Who's there?" and from Francisco's later question, "Bernardo?" regarding the time at which the action of the scene takes place?

(b) What word should be emphasised in reading Francisco's first speech? Give a reason for your answer.

(c) Why does Bernardo say, "Long live the king?"

(2) Just then, as through one cloudless chink in a black,
stormy sky,
Shines out the dewy morning star, a fair young girl
went by.
(Macaulay's "Virginia," in "Lays of Ancient Rome.")

What do you infer regarding (a) the appearance and character of the young girl, (b) the nature of her surroundings?

(3) *Giovanni* [*Detaining Pulci, who is about to open the door.*]
I must not meet a stranger.
[*Takes off mask.*]

Hither! look on my face.

Pulci [*falling on his knees*]. Mercy, great Lord!

Take not my life—this commerce after hours

Is for my child.

(Stephen Phillips: "Paolo and Francesca.")

(a) Why does Giovanni prevent Pulci from opening the door?

(b) Why does Giovanni show Pulci his face?

(c) What do you infer regarding Pulci's business and the relationship between him and Giovanni?

(4) Tiger, tiger, burning bright
In the forests of the night,
What immortal hand or eye
Framed thy fearful symmetry?

(William Blake.)

(a) Why is the tiger described as "burning bright"?

(b) What is contrasted with the brightness of the tiger?

(c) Explain the word "symmetry" as applied to the tiger. Why is the symmetry described as "fearful"?

(5) Idleness is the greatest prodigality in the world; it throws away that which is invaluable in respect of its present use, and irreparable when it is past, being to be recovered by no power of art or nature.
(Jeremy Taylor.)

State in one word what it is that Idleness throws away. Show from the context of the passage quoted that your answer is correct.

(6) Now the great winds shorewards blow;
Now the salt tides seawards flow;
Now the wild white horses play,
Champ and chafe and toss in the spray.
(Matthew Arnold: "The Forsaken Mermaid.")

(a) What is meant by the "wild white horses"?

(b) Why is the use of the words "champ" and "chafe" especially appropriate?

(7) *Polonius.* My lord, the Queen would speak with you and presently.

Hamlet. Do you see yonder cloud, that's almost in shape of a camel?

Pol. By the mass, and 'tis like a camel, indeed.

Ham. Methinks it is like a weasel.

Pol. It is backed like a weasel.

Ham. Or like a whale?

Pol. Very like a whale.

Ham. Then will I come to my mother by-and-bye.
They fool me to the top of my bent.

(a) Explain the full significance of the word "then" in Hamlet's last speech.

(b) What does Hamlet mean by saying, "They fool me to the top of my bent"?

(8) And on the *spike* that *split* the mother's *heart* *spitting* the child. (Tennyson: "The Coming of Arthur.")

(a) What classes of vowel and consonant sounds predominate in the underlined words?

(b) What effect does their use produce?

(9) Is there any peace
In ever climbing up the climbing wave?

(a) Justify the repetition of the word "climbing."

(b) Is there any difference of meaning between the first and the second use of the word? If so, explain the exact significance of each.

(c) What answer is implied to the above question? What name is given to a question that implies such an answer?

Such "unseens," when conducted orally, as they should be in the first instance, might be said to correspond to object lessons in an elementary course, or experimental lessons in physics or chemistry in a more advanced curriculum. They are experiments in humanistic investigation, as the latter are in scientific investigation. Just as, after an experiment in physics or chemistry has been performed, a boy may be asked to explain the inferences to be drawn from it regarding the natural world, so in literary study he may be asked to explain, regarding the world of thought and feeling, the inferences to be drawn from a passage or "experiment" in literature. From the answers received the teacher of literature will come to know his pupils more intimately, will be able to gauge more accurately their quickness of sympathy and understanding, their capacity for thought and for feeling.

In order that this result may be obtained it is important that the pupil should not have seen previously the passages that form the subject of the "experiment." In the ordinary examination, for which set work is prescribed—a play of Shakespeare, a poem of Tennyson, or what not—a pupil in his answers generally can, and, as a matter of fact, generally does, simply reproduce the comments of his teacher or the "notes" of his text-book: there is involved little more than memory work; but when an explanation is required of passages that have not been seen previously the case is different, the pupil must think for himself. It is clear, indeed, that the answering of questions such as are given above presupposes the exercise of original faculty by the pupil; before the passages cited can be interpreted, ideas, feelings and images will be evoked, and they will be the pupil's own ideas, feelings and images—not those of his teacher or the writer of his text-book. Since the passages are given apart from their context, the answers to be returned must be inferred often from hints that

are contained only implicitly in the quotations; scope is given for the working both of the intellect and the imagination. For instance, in the first passage given above, the opening scene of "Hamlet," the required inference to be drawn from Bernardo's opening question, "Who's there?" and from Francisco's later question, cannot be deduced from any statement that is actually in the text; but the two questions would have no rational meaning unless we supposed that on account of the darkness there is some difficulty in distinguishing objects; hence the first query (a) is answered by saying that the action of the scene occurs probably at night. Similarly, in answering question (b), which asks what word should be emphasised in reading Francisco's first speech, we proceed by noticing all that is said previously regarding the character in question. We observe that he is described as being "on his post;" nevertheless, Bernardo, the newcomer, challenges him first, calling out "Who's there?" Naturally the sentinel objects to this reversal of the mode of procedure and expresses his dissent. "Nay," he says, "answer *me*, stand and unfold yourself," and Bernardo replies by giving the password for the night, "Long live the king." It is evident that the answering of such questions will make it necessary for a pupil to think and reason for himself; it will make him reflect, too, on human character and disclose to him something of the springs of human action; and it will cultivate his imagination and his feelings, for he must place himself for a time in the position of characters outside of himself in order that he may understand them. In this way a pupil will be brought into contact with reality, will be drawn near to life. Furthermore, through such questions his attention may be directed to the more formal aspect of literature regarded as a means of expression; he may be asked to think of the fitness or unfitness of particular words to express particular shades of thought and feeling, as in the question on the ninth passage:—

Is there any peace
In ever climbing up the climbing wave?

Where he would be expected to justify the repetition of the word "climbing" by saying that the double use suggests a sense of repeated effort and continuous toil, opposed to the idea of peace mentioned in the first line.

Bible Flowers. By Rosemary E. Cotes. 280 pp. (Methuen.) 2s. 6d. net.—This is a clever, curious, and charming book by a lady already known as a commentator on Dante's great poem. It is a volume conveying a large amount of information which is most lucidly put before its readers, and in its simplicity it ought to appeal to a large number of young people. It has been written from a broad point of view, for the authoress is careful to step outside sectarian prejudice. The amount of curious information, dug in many cases from recondite sources, which Miss Cotes has here collected must move the admiration of anybody who understands the labour it must have entailed, and the mythological and patristic stories which are to be found in these pages are all well selected and charmingly told. Miss Cotes has produced a book of great value for girls; and many other people would be none the worse for reading it.

PRACTICAL SOLID GEOMETRY.

By G. F. BURN.

Head of the Mechanical Engineering Department, Leeds Technical School.

THE main object of this article is to describe a method for the solution of problems on orthographic projection by folding in such a manner as completely to verify the processes. It is hoped that the time has passed when the would-be geometrician merely covered reams of paper with a multitude of problems picturesquely worked out in the orthodox way on a common *xy* line drawn midway across the sheet, whether he understood them or not, and yet felt satisfied with the display. Is it really necessary to affirm that quality is everything in geometry and quantity might stand for nothing? Mere drawing does not go far enough in any case, but a method of cutting the paper and folding solutions is *par excellence* the chief auxiliary upon which the teacher will rely, and, it is thought, will be the general method of the future, particularly in that section of the subject known as "descriptive"; and when one examines its effects on students of, say, only ordinary mental calibre, one is perforce driven to the conclusion that the result cannot possibly be other than gratifying; but rational methods or anything whatsoever that acts as an incentive or encourages a beginner to probe into the why and wherefore of a demonstration should, of course, be welcomed. For this reason a good plan as an auxiliary is to train students to make freehand perspective sketches or approximate metrical views, illustrating fundamental principles as projected on the co-ordinate planes, side by side with the corresponding cut-out orthographic projections. Thus, suppose we have orthographic projections of a regular hexagon placed in a vertical position, with one of its sides in the vertical plane of projection, but the plane of the hexagon itself inclined at a given angle to the vertical plane. Or, imagine three projections of a point in space to be given, viz., a plan and two elevations. In such cases as these there is everything to gain and nothing to lose if a teacher makes pictorial illustrations in rough perspective of the planes of projection and solutions of the problems, so as to give realistic impressions of the actual lines in space requisitioned in the processes, as even the uninitiated are then able to appreciate tolerably well the forms depicted, particularly in those cases where problems involving geometrical solids are involved. Problems on plane surfaces, or solids having plane surfaces for faces, inclined to a plane of projection, lend themselves to easy treatment. Triangles, rectangles, &c., can be cut, save one side of the figure, about which it may be supposed to be hinged. Cut out one of the planes of projection as well and fold it in such a manner that it makes 90° with its companion co-ordinate plane; the whole can then be viewed in its natural position.

The "oblique" plane, that is the secondary

plane inclined at least to two of the planes of projection, presents difficulties to a beginner, which, if not exactly forming the rock which marks the end of his geometrical career, is always a source of considerable anxiety to the person whose office is to guide his student through the shoals and depths of this intricate subject. It would appear that it is here in particular the business of the teacher to invent ways and means of presenting the matter to his pupils lucidly and thoroughly, "lest they be discouraged." Teachers' ready-made models are in evidence, and rightly so, wherever this section of the subject is taught. The writer is confident that if instructors urged students to verify their own work on oblique planes by turning them to shapes and giving to "airy nothing a local habitation," interest in the subject would be enhanced and results would be highly gratifying.

For illustration, take the common case of an oblique plane, the inclination of which and real angle between the traces are required to be determined by construction. Let $v'o, o'h$ (Fig. 1),

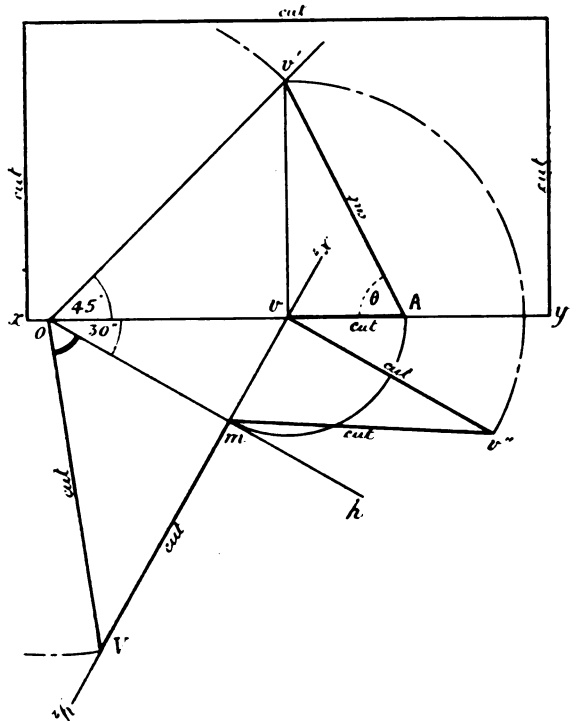


FIG. 1.—Showing how to verify the methods of finding the inclination to the horizontal plane of a given oblique plane, $v'o'h$, the angle between its traces, and its conversion into an inclined plane, by cutting and folding the drawing.

represent the two traces of the plane. The usual method of finding the real angle $V o h$ between the traces is to rabat or fold one of them about the other into a plane of projection. Thus V is here rabatted about the horizontal trace $o'h$ into the horizontal plane. If the paper at $m'V$ and $o'V$ be cut with a sharp penknife, the triangle can be folded about $o'm$ into a position representing the given plane in space; also the vertical plane can be cut along the three border lines above the

ground line, where indicated, and folded about xy to an upright position. Further, if an arc be drawn with v as centre, radius vm , to cut xy in A , and if $A v$, $A v'$ be cut through, it is then possible to fold the triangle so formed about $v v'$, so as to show that the angle θ equals the angle of inclination of the oblique plane to the horizontal plane.

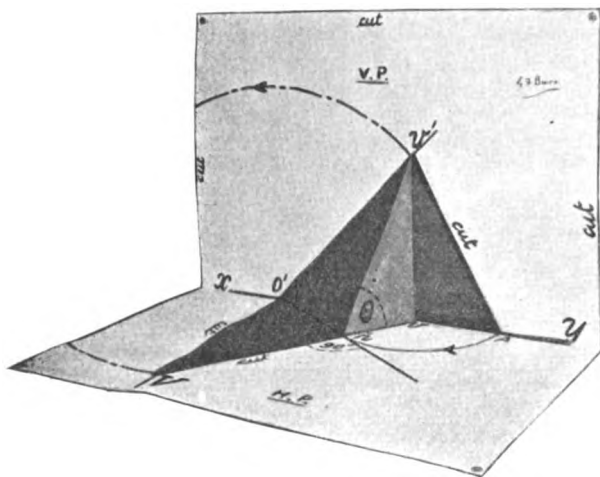


FIG. 2.—Showing in perspective the method of verifying the problem illustrated in Fig. 1.

By reference to the photograph in Fig. 2—which is merely a perspective view which the teacher could sketch to convey a realistic impression of the conditions and solution of this problem, as distinguished from the orthographic projection in Fig. 1—it will be seen that the triangle $v' A v$ is the generator of a right cone with axis vertical, which might be supposed to fit exactly underneath the plane, its base-angle θ corresponding to the inclination of the plane; whilst the line $o V$, rabatted from $o v'$ into the horizontal plane, can be imagined to pursue a path approximately indicated by the direction of the arrow-head.

Perhaps one of the most valuable problems in solid geometry is the conversion of an oblique plane into an "inclined" plane, that is, a plane inclined only to one plane of projection. It enables the draughtsman to view an oblique plane "edge-on," and, therefore, to see in the new trace a projection of all the points or lines that may be contained by the plane. Frequently the more advanced student is compelled to have recourse to the principle of transference of secondary planes from ground line to ground line without disturbing their fundamental positions in space; and, indeed, all planes in the science of "horizontal projection" are useless until they are "converted" into inclined planes. This important problem may be explained in conjunction with the preceding problem, and we may have recourse to the same construction lines. Let, for example, $v'oh$ (Fig. 1) be a given oblique plane. At any convenient place, say through v ,

draw a new ground line, $x_1 y_1$, at right angles to the horizontal trace of the given plane, cutting it in m . The elevation of V on this new ground line is v'' . Join $v'' m$. The inclined plane $v'' m o$ —referred to the new ground line $x_1 y_1$ —is the given plane, as looked at from a new point of view, without changing the original position of the plane in space. For the purpose of experimental verification, proceed as if to find the real angle, $V o m$, between the traces of the given oblique plane, in the manner explained. Cut through the paper along the lines $v v''$, $m v''$. If the three cut portions be now bent about creases made at om , vm , and xy respectively, they will be found to fit together in a manner not unlike the case already described.

By means of this simple little model, a beginner may be brought further to see that the inclination of the plane is equal to the angle $v m v''$, which connects the two ideas involved in these two problems, and identifies them as one.

An occasional analytical investigation is a desirable check in such leading and useful problems. Thus, in this case, let the vertical trace of the oblique plane make 45° , and the horizontal trace make 30° with xy .

Then

$$ov = vv' = vv'' \text{ unit, say;}$$

$$mv = ov \cdot \sin 30^\circ = \frac{\text{unit}}{2};$$

$$om = ov \cdot \cos 30^\circ = \text{unit} \times \frac{\sqrt{3}}{2};$$

$$ov' = o V = vv' \operatorname{cosec} 45^\circ = \text{unit} \times \sqrt{2}.$$

Hence the inclination of the given oblique plane to the horizontal plane $= v m v'' = \tan^{-1} 2 = 63^\circ 26'$, and the real angle contained between its traces

$$= V o m = \cos^{-1} \frac{\sqrt{3}}{2} = \cos^{-1} 0.612 = 52^\circ 14', \text{ and}$$

so forth.

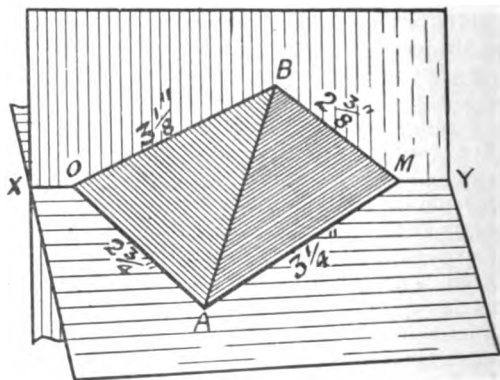


FIG. 3.—A pictorial view of two intersecting oblique planes.

Arising from these fundamental cases, an interesting experiment may be suggested, which involves, in addition to what has already been done, cutting the paper in the form of a triangle so as to fit exactly into one of the four dihedral angles con-

tained by two given intersecting planes. To put the matter more definitely :

From a single piece of paper, to verify the method of finding the dihedral angle between two given planes, by cutting and folding in such a manner as to show all the planes and lines involved, in their true position relatively to one another.

Let us take, for general illustration, two oblique planes, as shown pictorially by Fig. 3, intersecting in the common line, AB . It will perhaps be found desirable, first of all, to lay down segments of the vertical traces as $3\frac{1}{8}''$ and $2\frac{3}{8}''$ in length; and the corresponding horizontal traces as $2\frac{3}{4}''$ and $3\frac{1}{4}''$ long respectively. It will then be suitable to let the distance, $o'm'$ (Fig. 4), where the pairs of traces intersect xy , be set off $4\frac{1}{4}''$.

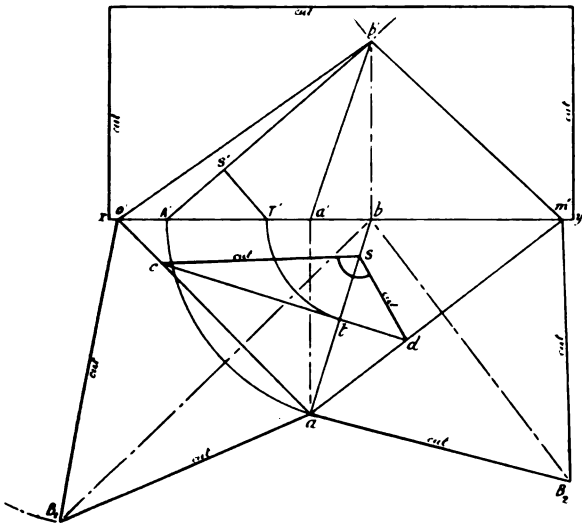


FIG. 4.—Showing the dihedral angle between two given oblique planes and the nine lines to be cut to verify the solution.

A good method of finding the magnitude, $c S d$, of the dihedral angle, is to draw the horizontal trace, $c d$, of an auxiliary cutting plane, at right angles to the plan, $a b$, of the intersection of the given oblique planes $b' o' a, b' m' a$, cutting their horizontal traces in c and d respectively (c may here be $2\frac{1}{8}''$ from a for convenience) and $a b$ in t . Having rabatted a and t into the vertical plane, and drawn $S'T'$ perpendicular to the true length, $A'b'$, of the intersection, make $S t = S' T'$. Now join $S c, S d$, when the angle $c S d$, or its supplement, is the measure of one of the dihedral angles formed at the intersection of the two given planes.

Afterwards proceed as if to find the true angles, $a o' B_1, a m' B_2$, between the traces of the given planes, by rabatting B into the horizontal plane in each case, as in Figs. 1 and 4. Join $a B_1, a B_2$. Cut along $c S, S d$, and bend up the triangle $c S d$ along the crease $c d$. Cut $o' B_1, a B_1$, and bend up the triangle $o' B_1 a$ about $o'a$. Cut along $m' B_2, a B_2$, and bend up the triangle $m' B_2 a$ about $m'a$. Lastly, cut the vertical plane along the three strong border lines drawn above xy , and bend it up through 90° . It will now be observed in Fig. 4 that the three triangles can be revolved about their bases in such

a manner that the sides $a B_1$, and $a B_2$, coincide in the intersection AB , and the sides $c S, S d$ (which together include the dihedral angle) lie in the planes represented by the two other triangles. By cutting away the whole model so formed, and removing it from the drawing board, it may now be handled and inverted, when there will be no difficulty in realising the dihedral angle and all lines connected with its determination.

There are, of course, many other important principles in practical geometry which might very profitably receive practical treatment in a simple manner by the aid of a sharp penknife in the way here set forth, but it is hoped these two or three examples given in this article will suffice to illustrate the importance of treating a practical subject in a practical manner. An intelligent student will be quick to invent his own method of cutting and folding for personal investigation, where solutions of such problems will admit of its being done.

AN EDUCATIONAL BIOGRAPHY.¹

MR. FOWLER has here collected a few notable papers written by his friend, and has prefaced them with a short memoir and some characteristic letters. The papers are admirable and important, they are indeed becoming classical; but they sadly deepen our sense of loss. Of the brief memoir it is enough to say that Mr. Fowler's part is written with the dignity and reserve which would have commended themselves to the subject of it, if one could ever imagine his consenting to a book about himself; and that a few intimate friends familiar with him at different stages of his career have paid the last dues of piety not unbecomingly. He was a truly good man and a real force in his place and generation. Yet; *quantulus ecce cinis!*

It is commonly said in reviews of good books that they should be in everyone's hands. It is certain that every schoolmaster should read the stimulating story of this too short life, and see how much noble work and what wholesome thought could be resolutely, modestly, and unselfishly crowded into it by a man who honestly believed that a schoolmaster's task was the happiest conceivable.

Withers certainly did as much as any Englishman of his time to establish the propriety and need for the careful professional training of all grades of teachers, and of this part of his work the little book occasionally speaks. But he was always actually and actively helping some one, and in the few papers here collected there is chiefly first-hand help and stimulus for the form-master or class-teacher. Withers was a real practical philosopher. You read his paper on "Work and Play," addressed to the Frœbel Society, and you find him

¹ "The Teaching of History, and other Papers." By H. L. Withers. Edited, with Biographical Introduction and a Selection from his Letters, by J. H. Fowler. (Sherratt & Hughes.)

giving you something more than hints on the conduct of public-school athletics, temperate and convincing. You get in a letter addressed to a friend on a "model" school the secret of making a form-master's work effective as part of a whole. His chapter on ancient history, here reprinted from Mr. Barnett's "Teaching and Organisation," is without doubt the best accessible guide, not to a syllabus only, but to a method. Of the three remarkable papers which he wrote on history teaching this was the first and most pregnant; the subject is complemented in the paper on the "Teaching of History in the Nineteenth Century," written for a University Extension gathering, and by the history scheme to be followed in public elementary schools which he drew up for the London School Board.

The signal proofs of exceptional ability to help his fellow-teachers emphasise what his friends knew best—that he remained to the end of his short term a devoted teacher, and that he was never so happy or so effective as with a class of boys, whether at Manchester, or Clifton, or elsewhere. He began his self-training at an "elementary" school because he felt (though he may never have formulated the fact) that the big and, so to speak, the coarser problems of teaching are there set forth on a simpler and larger plan than in a secondary or public school. Effective *discipline* in a school of a different type was something else, to be learnt, if learnt at all, in a different atmosphere. But enduring and cheerful work was to come most surely to the man "who believed in his job," and was neither weighted by pedantries nor dulled by listless and self-satisfied routine.

JERUSALEM UNDER THE HIGH PRIESTS.¹

MR. BEVAN has already made his reputation amongst scholars with the admirable history of the House of Seleucus. In the book before us, he uses his knowledge to illuminate for a popular audience the obscure period which lies between the Book of Nehemiah and New Testament times. The pictures drawn in the book are partly political and partly social.

On the one hand, we have the relations between the Jewish community and the war of nations outside; on the other, the effect of the Hellenic ideals on their social system. We do not remember to have seen these topics so clearly sketched in any book; and the author takes occasion to correct many popular misconceptions. Thus he shows how, in the entire part of this period, the Jews were a small provincial community, surrounded by savages or alien races, and confined to a radius of a few miles round Jerusalem. Their government, at some time in that period, came to be in the hands of the

High Priest only. He draws the portrait of a typical high priest, and traces the career of the ambitious and unscrupulous Joseph of the house of Tobiah. The moral and social ideals of the period are illustrated from the book of Ben Sira, and appear to be a strange mixture of piety and materialism. That eternal riddle, Antiochus Epiphanes, is described in a convincing way; and the exploits of the Maccabees set forth with discretion.

On the other side, the effect of Hellenism in changing (for good and evil) the outward aspect of Jewish social life is well explained, and it is estimated not with the censoriousness of the pious conservative, but with the common sense of the man of the world.

Civilization and education, intellectual quickening, and bodily culture with material pomp and show, were seen in Syria; but not without that relaxing and that tendency to sensuality which mark Hellenism when it passes from the asceticism of Greece to the warmth and softness of the east. The "Psalter of Solomon" and the "Book of Daniel" are cited as expressing the feelings of the men who lived in those days. Every page is interesting and clear; learning is not obtruded, but the reader feels safe because it is always there. Altogether it is a valuable book for all intelligent students of Scripture history. We would call attention, however, to one odd mistake in arithmetic which appears to place the year 164 B.C. at a distance of two thousand five hundred and eight years from the present day (page 90).

NAPOLEON THE GREAT.¹

THE attention of both students and general readers has been directed of recent years to the history of those thirty years of European history which, known by the names of the French Revolution and the Napoleonic age, form a great watershed between the nineteenth century and all that went before it. Many important works have appeared in various languages which have largely changed our ways of regarding the events of that generation and of estimating the chief characters. The archives of the various European countries have been explored, the correspondence of the chief actors has been published, and we are no longer dependent on the "Memoirs" written in later years by those who, consciously or unconsciously, gave but a subjective account of the events of their lifetime.

The consequence is that the old histories of Napoleon are now out of date, not only for details but even for the larger aspects of national and international events, and the way was open for a new presentation of the facts. And therefore it was that the British public welcomed, three years

¹ "Jerusalem under the High Priests." Five lectures on the period between Nehemiah and the New Testament. By Edwyn Bevan. ix. + 170 pp. (Edward Arnold.) 7s. 6d.

¹ "The Life of Napoleon I." By J. H. Rose. Vol. I., xv. + 572 pp. Vol. II., vii. + 506 pp. (Bell.) 10s. net. "Napoleonic Studies." By J. H. Rose. xii. + 398 pp. (Bell.) 7s. 6d. net.

ago, the "Life of Napoleon," by Dr. Rose, the fourth edition of which (reduced in price at the cost of the illustrations, though not of the maps and plans) has lately appeared. At the same time there comes a volume of Napoleonic studies, the "chips from an English workshop" as we may call them, most of which is intended for the deeper student, though all of it is profitable, and some of it interesting, to the general reader. Of the twenty-two items in this book we should particularly recommend five. In the first, the author traces the literary, idealist revolt against Napoleon, as seen in the writings of Wordsworth, Schiller and Fichte. Another discusses Napoleon's personal religious belief. Two others will interest students of economics (and we all are, or at least should be, students thereof in these days of "fiscal reform"), for they treat of Napoleon's relation to British commerce and specially to the question of food supply in time of war. A fifth, on "the Whigs and the French War," is an example of how we ought to learn politics from history, for it gives the history and the effects of the pro-French party in England during the years 1793-1805.

Napoleon is so great a figure in history, his activities were so enormous, his opportunity so unique that, whether we will or no, we must understand him and his work, not only in France but in the Rhine lands, in Italy, in the Netherlands, and in Europe generally, if we are to understand the history of these countries and the world in which we dwell. It is for this reason that we recommend our readers to read these three volumes of Dr. Rose's and to impart the result thereof to their pupils. The "Life" especially should be added to the school library as the standard biography of him whom—but that Dr. Rose is too historical—we were going to call his hero.

THE MOST NOTABLE SCHOOL-BOOKS OF 1904.

It is difficult for most teachers to become familiar with even the most important of the school books published during the course of a year. To assist schoolmasters and school-mistresses to make a selection of books in the chief subjects of the school curriculum published during 1904, we have secured the assistance of experienced and competent authorities on these subjects who are each in touch with the needs of schools of all grades. Teachers who examine the books of the year enumerated below will at least have the satisfaction of knowing they have acquainted themselves with the scope and contents of the best of the school books published during 1904. In compiling their lists the experts whose aid has been obtained have not confined their attention to books reviewed in these columns. In those cases where the title of a book is not a sufficient guide as to its contents, a few explanatory notes have been added.

Modern Languages.

"How to Teach a Foreign Language." By Otto Jespersen. Translated from the Danish by Sophie Bertelsen. (Sonnenschein.) 3s. 6d.

Every teacher of modern languages should read this excellent account of the reform method.

"The Teaching of German in Secondary Schools." By E. W. Bagster-Collins. (Macmillan.) 6s.

Although this book is written with reference to American schools, it can be read with profit by teachers in England.

"The Literature of the French Renaissance." By Arthur Tilley. 2 vols. (Cambridge University Press.) 15s. net.

"Geschichte der deutschen Literatur von den ältesten Zeiten bis zur Gegenwart." By Vogt and Koch. 2 vols. (Leipzig: Bibliographisches Institut.) 10s. each.

A very good reference book, splendidly illustrated.

"Grammaire Historique de la Langue Française." Tome I. By K.-R. Nyrop. Revised and enlarged edition. (Leipzig: Harrassowitz.) 8s. net.

Warmly recommended.

"Elements of French Pronunciation and Diction." By B. Dumville. Introduction by P. A. Barnett. (Dent.) 2s. 6d. net.

Certainly the best book of its kind.

"A Book of French Prosody, with Specimens of French Verse from the Twelfth Century to the Present Day." By L. M. Brandin and W. H. Hartog. (Blackie.) 3s. 6d.

A convenient introduction to the study of French prosody, with a good selection of specimens.

"Lectures Scientifiques." By W. G. Hartog. A French Reader for Science Students. (Livingtons.) 5s.

Well compiled; such a book was wanted.

Classics.

The number of important books on classical subjects published this year has been above the average.

For the Use of Teachers.

(1) "Prolegomena to the Study of Greek Religion." By Miss J. E. Harrison. (Cambridge University Press.)

Gives for the first time a systematic inquiry into the popular elements of Greek religion, magic and superstition, ghosts and bogies, and all that appeals to fear. The book also discusses the groups of female deities which meet us on Greek soil, and estimates the spiritual elements in Dionysiac and Orphic worship.

(2) Croiset's "Abridged History of Greek Literature." (The Macmillan Company.) 10s. 6d. net.

A brightly written and interesting narrative, written with the lucidity and sense of proportion which we expect from a French scholar, and by an acknowledged authority.

(3a) "Sources for Roman History," B.C. 153-70. By A. H. J. Greenidge and A. M. Clay. (Clarendon Press.) 5s. 6d.

An excellent collection of authorities: and based upon it—

(3b) Dr. Greenidge's "History of Rome during the Later Republic and Early Principate," Vol. I. (B.C. 133-104).

An able work on a large scale, which will not decrease the author's reputation as one of the chief English authorities on Roman history.

(4) "A History of Classical Scholarship." By Dr. J. E. Sandys. (Cambridge University Press.) 10s. 6d. net.

Tells the story of the study of classical literature in antiquity and down to the birth of Petrarch.

Of edited books the chief is:—

(5) "Homeric Hymns." Edited by T. W. Allen and E. E. Sikes. (Macmillan.) 10s. 6d.

Important both textually and for the commentary. The

"Hymns" badly needed editing, and the most important recent edition, that of Gemoll, left much to be desired. Mr. Allen ranks high as a critic and Mr. Sikes is a good commentator.

For School Use.

Among books for school use the following deserve mention:—

(6) "Selections from Tibullus and Others." By Dr. J. P. Postgate. (Macmillan.) 5s.

These are easy pieces of elegiac verse from authors not often read and the editing is excellent. The Introduction is learned and full of original research, and it contains new information about the forms of the pentameter.

(7) "Myths from Pindar." Selected and edited by H. R. King. (Bell.) 2s. 6d. net.

A capital introduction to Pindar, well-printed and illustrated. It is well suited to a Sixth Form.

(8) "Story of the Kings of Rome, adapted from Livy." By G. M. Edwards. (Pitt Press.) 1s. 6d.

Thoroughly well edited and suitable for a first author.

(9) "Pro Patria, a Latin Story." By Prof. Sonnenschein. (Sonnenschein.) 2s. 6d.

A continuation of "Ora Maritima," for beginners.

(10) "Tacitus, Histories, III." By W. C. Summers. (Pitt Press.) 2s. 6d.

With a good introduction.

On the study of the classics generally two admirable books have appeared.

(11) "Harvard Lectures on Greek Subjects." By Prof. S. H. Butcher. (Macmillan.) 7s. net.

Readers of his lectures on "Greek Genius" will not be disappointed with the new work: we can offer no higher praise.

(12) "Lectures on Classical Subjects." By Prof. W. R. Hardie. (Macmillan.) 7s. net.

Contains studies on Nature as viewed by the ancients, the Golden Age, and the principles of Poetry.

We ought also to mention four standard editions now adapted for schools: W. W. Goodwin's "Demosthenes De Corona" (Cambridge University Press), 3s. 6d.; Wickham's "Horace," in 2 vols. (Clarendon Press), 6s. each; Furneaux's "Annals of Tacitus," XIII.-XVI., abridged by H. Pitman (Clarendon Press), 4s. 6d.; and W. Petersen's "Quintilian Institutionis Oratoria, X." (Clarendon Press), 3s. 6d.

English Language, Grammar, and Composition.

The year has not produced the *ideal* English grammar for senior pupils—not only systematic and scholarly but also well-arranged for use in class and intelligible—the book for which the present writer has been waiting for sixteen years. During that time he has studied many grammars and experimented on classes with several, only to find some of them scholarly but impossible to teach from, and others suitable for class-work but defective in scholarship or constructed with too much reference to this or that examination.

As regards the language, the book of the year is undoubtedly "The Making of English." H. Bradley. (Macmillan.) 4s. 6d.

A most attractive and suggestive treatise for teachers: quite indispensable. Senior pupils may also profit by it.

"Advanced English Syntax." G. C. T. Onions. (Sonnenschein.) 2s. 6d.

For Seniors. Will be best appreciated by those who use the Parallel Grammar Series.

"Elements of English Composition." T. F. Huntington. (Macmillan.) 3s. 6d.

Perhaps more for teachers than for pupils. Should prove a trustworthy guide, and provide suitable material.

"The King's English and How to Write it." J. Bygott and A. J. L. Jones. (Jarrold.) 1s. 6d.

"Style in Composition." W. J. Addis. (Allman.) 2s.

Both adapted for London Matriculation, Civil Service, and similar examinations.

"Composition for Schools and Colleges." C. H. Maxwell. (Meiklejohn and Holden.) 1s.

Very good outlines of a hundred essays, which the judicious teacher will find helpful.

"Magnus's English Course. Book I. Words and their Uses." Laurie Magnus. (Routledge.) 10d.

For Juniors. Clear and practical. Very good exercises.

"Every-day English." J. S. Rankin. (Educational Publishing Company.) Book I., 2s. Book II., 2s. 6d.

An attempt to teach English without direct reference to grammar.

History.

For Class Use or School Library.

"Ancient History." W. H. Salter. (Horace Marshall.) 2s. 6d.

Greek and Roman History.

"A Source Book of Roman History." D. C. Munro. (Heath.) 5s.

"History of the Middle Ages." D. C. Munro. (Appleton.) 4s. net.

"Social Life in England," Vol. II. J. Finemore. (Black.) 1s. 6d.

Seventeenth and eighteenth centuries.

"A Junior History of England." C. and M. Oman. (Arnold.) 2s.

"Heroes of Industry." E. E. Cooke. (Routledge.) 1s. 6d. English inventors, &c.

"Illustrative History": (1) British and Old English Period. E. J. Bailey. (2) Tudor Period. N. L. Frazer. (Horace Marshall.) 2s. each.

English history illustrated by pictures and extracts.

"A Historical Geography of the British Empire." H. B. George. (Methuen.) 3s. 6d.

"Readings in European History." J. H. Robinson. (Ginn.) 7s.

For the Use of Teachers.

"The Ancient World." E. M. Wilmot Buxton. (Methuen.) 3s. 6d.

Babylonia, Assyria, Egypt, Phœnicia, &c.

"Mediaeval England." M. Bateson. (Unwin.) 5s.

Descriptive of institutions, &c., not narrative.

"The Cambridge Modern History," Vol. II. "The Reformation," Vol. VII. "The French Revolution." (Cambridge University Press.) 16s. net.

A standard work by various writers, summarising the results of modern research.

"Life of Napoleon I." J. H. Rose. (Bell.) 10s.

A cheap edition.

Geography.

"An Elementary Class Book of General Geography." New Edition. By H. R. Mill. (Macmillan.) 3s. 6d.

"Physiography." By T. H. Huxley. Revised and partly re-written by R. A. Gregory. (Macmillan.) 4s. 6d.

A new edition of a school "classic" work up to date.

"Arnold's Home and Abroad Readers," six books. (Edward Arnold.) 10d. to 1s. 6d. each.

"The International Geography," 3rd edition. By H. R. Mill. (Newnes.) 15s.

All teachers should have access to this essential book of reference.

"Regional Geography: the British Isles." By J. B. Reynolds. (Black.) 2s.

"Our World-wide Empire." By Vincent T. Murché. (Macmillan.) 2s. 6d.

"A Survey of the British Empire." Anon. (Blackie.) 2s.

"Origin and Growth of the English Colonies, and of their System of Government." By H. E. Egerton. (Clarendon Press.) 2s. 6d.

This serves as a new introduction to C. P. Lucas's well-known History of the British Colonies.

"Australia and Oceania." By F. D. and A. J. Herbertson. (Black.) 2s. 6d.

The completion of the "Descriptive Geographies" series.

"Geography of South and East Africa." By C. P. Lucas. (Clarendon Press.) 3s. 6d.

Chapters on the Transvaal and Orange River Colonies, by H. E. Egerton, are included.

"Handbook of Modern Japan." By E. W. Clement. (Paul.) 6s.

Of several atlases published during the year attention should be drawn to "Philips' Modern School Atlas of Comparative Geography," 3s. 6d.; and to such reference works as "Bartholomew's Great Survey Atlas of England and Wales, £3 10s. net; and 'Philips' Mercantile Marine Atlas," £3 3s.

Mathematics.

"Exercises in Arithmetic (Oral and Written)," with answers; Parts I., II. and III. By C. M. Taylor. (Edward Arnold.) 1s. 6d. each part.

Part I. contains the first four rules; Part II., factors, easy fractions, both vulgar and decimal; Part III., more advanced fractions, areas, volumes, proportion, percentages, interest, &c.

This work is not an exposition of the *theory* of the various arithmetical rules, but an ample collection of examples of these rules proceeding upwards from the most easy and elementary processes, and therefore suitable to pupils who are the merest beginners.

"Arnold's Number Lessons." (Edward Arnold.)

A series of twelve little books, six for pupils and six for teachers, the prices ranging from twopence to sixpence per book. The series consists largely of unworked exercises, but there are many hints and explanations of the various arithmetical processes when such appear to be necessary.

A complete course of arithmetic is covered by the series, which is well graduated and arranged, and will be found very useful both for pupils and for teachers.

"Worked Problems in Higher Arithmetic." By W. P. Workman and R. H. Choqe. (Clive.) 2s.

This book is divided into two parts, in the first of which are solved several of the problems in the "Tutorial Arithmetic." The second part is specially useful to teachers.

"A New Geometry for Junior Forms." 2s. 6d. "A New Geometry for Senior Forms." 3s. 6d. Both by S. Barnard and J. M. Child. (Macmillan.)

These are two of the series of three works on Geometry by the authors, the third being their well-known "New Geometry for Schools," the more advanced portion of which, together with an addition on Solid Geometry, forms the subject matter of the second of the above works.

"A School Geometry," Part VI. By H. S. Hall and F. H. Stevens. (Macmillan.) 1s. 6d.

This volume is devoted to Solid Geometry and contains the substance of Euclid's Book XI., together with a great deal of work on the surfaces and volumes of cylinders, cones, spheres, and other solids.

"Solutions of the Exercises in Godfrey and Siddons's

Elementary Geometry." By A. E. Price. (Cambridge University Press.) 5s.

A very useful book for pupils and teachers who use the well-known book in which the authors have presented the reformed geometry which is taking the place of Euclid.

"An Elementary Treatise on Graphs." By George A. Gibson. (Macmillan.) 3s. 6d.

A much-needed systematic work, giving not only the usual graphic methods of the solution of quadratic and higher equations, but also applications to trigonometrical and logarithmic equations, together with some work on the properties of conic sections, adiabatic curves, &c.

"Practical Geometry for Beginners." By V. Le Neve Foster and F. W. Dobbs. (Macmillan.) 2s. 6d.

A very elementary work quite suitable to young geometers.

"Elementary Algebra." Part I. By W. M. Baker and A. A. Bourne. (Bell.) 2s. 6d., or with answers, 3s.

Ends with quadratic equations, the theory of which is fully explained, as well as the solution by means of graphs. The graphic solution of simultaneous quadratics in x and y is also explained at considerable length.

"Solutions of Examples in Hall's Graphical Algebra." By H. S. Hall and H. E. Beaver. (Macmillan.) 3s. 6d.

A very useful little book on the drawing of the ordinary algebraic and trigonometrical graphs.

"The Elements of Trigonometry." By S. L. Loney. (Cambridge University Press.) 3s. 6d.

An elementary selection from the author's larger work, with a little more graphic work and tables of four-figure logarithms. Goes up to, but does not include, De Moivre, and is almost exactly the London University Intermediate Course.

"A New Trigonometry for Schools." Part I. By W. G. Borchardt and A. D. Perrot. (Bell.) 2s. 6d. Also Part II.

The first part ends with the usual formulæ relating to triangles and contains a table of four-figure logarithms. The second part contains the higher portions—series, exponentials, De Moivre, &c., and a table of natural sines and tangents.

"The Elements of Plane Trigonometry." By R. Lachlan and W. C. Fletcher. (Edward Arnold.) 2s.

Includes, besides the very elementary work of the subject, series, expansions, De Moivre's Theorem, and exponentials.

Chemistry and Physics.

For Class Use.

"The New Matriculation Chemistry." By G. H. Bailey. (Clive.) 4s. 6d.

A trustworthy text-book, written to meet the requirements of the Matriculation syllabus of London University.

"Tables for Qualitative Chemical Analysis." By A. Liversidge. (Macmillan.) 4s. 6d.

Qualitative analysis is here treated in an educational manner.

For Use of Teachers.

"Introduction to the Study of Physical Chemistry." By Sir W. Ramsay. (Longmans.) 1s.

"The Phase Rule and its Applications." By A. Findlay. (Longmans.) 5s.

"Electro Chemistry. Part I. General Theory." By R. A. Lehfeldt and T. S. Moore. (Longmans.) 5s.

"Physical Chemistry in the Service of the Sciences." By J. H. van't Hoff. (University of Chicago Press.) 1.50 dollars.

"Recueil d'Expériences Élémentaires de Physique." By Henri Abraham. (Gauthier-Villars.) 5 francs.

A description of elementary experiments on geometry, mechanics, hydrostatics, capillarity, and heat.

"Mechanics, Molecular Physics, and Heat." By R. A. Millikan. (Ginn.) 7s.

The theory and practice of a few typical experiments are treated fully and accurately. A most attractive book.

"Electricity and Matter." By J. J. Thomson. (Constable.) 5s.

A most suggestive book, based upon a set of six lectures delivered at Yale University.

"Radio-activity." By E. Rutherford. (Cambridge University Press.) 10s. 6d. net.

A standard work written by one of the highest authorities on the subject.

"Radio-activity." By F. Soddy. (Electrician Printing and Publishing Co.)

"Theory of Heat." By T. Preston. New edition, revised by J. R. Cotter. (Macmillan.) 18s. net.

A standard work.

"Higher Text-book of Magnetism and Electricity." By R. W. Stewart. (Clive.) 6s. 6d.

Written to meet the requirements of the Final B.Sc. examination of London University.

"Electric and Magnetic Circuits." By E. H. Crapper. (Arnold.) 10s. 6d.

An attractive work, well up to date, and not too mathematical. Excellent numerical examples.

"An Introduction to the Theory of Optics." By A. Schuster. (Arnold.) 15s. net.

Natural History.

Botany.

"Botany Rambles." Part I., in the Spring, 10d. Part II., in the Summer, 1s. Part III., in the Autumn, 1s. By Ella Thomson. (Horace Marshall.)

"Second Stage Botany." By J. M. Lowson. (Clive.) 3s. 6d.

"The Physiology of Plants." By W. Pfeffer. 2nd fully revised edition, Vols. I. and II. Translated and edited by A. J. Ewart. (Clarendon Press.) 16s.

"Among the Garden People." By Clara D. Pierson. (Murray.) 5s.

Nature Study and Physiography.

"House, Garden and Field." By L. C. Miall, (Arnold.) 6s.

"Eton Nature Study and Observational Lessons." Parts I. and II. By M. D. Hill and W. M. Webb. (Duckworth.) 3s. 6d. each.

"Physiography: an Introduction to the Study of Nature." By T. H. Huxley. Revised and partly re-written by R. A. Gregory. (Macmillan.) 4s. 6d.

"Nature Teaching based upon the general principles of Agriculture." For the use of schools. By F. Watts and W. G. Freeman. (Murray.) 3s. 6d.

"The Ludgate Nature Study Readers." Books I., II. and III. 1s., 1s., and 1s. 3d. Edited by J. C. Medd. (Routledge.)

"Junior Country Reader, III." By Buchanan and Gregory. (Macmillan.) 1s. 4d.

"Senior Country Reader, III." By H. B. M. Buchanan. (Macmillan.) 2s.

"The Frank Buckland Reader." Edited by F. T. Buckland. (Routledge.) 1s. 6d.

"Quiet Hours with Nature." By Mrs. Brightwen. (Illustrated by T. Carreras. (Fisher Unwin.) 5s.

Zoology.

"The Natural History of some Common Animals." By O. H. Latter. (Cambridge University Press.) 5s.

"Our Country's Animals and How to know them"

(Mammals, Reptiles, and Amphibians). By W. J. Gordon. (Simpkin, Marshall.) 6s.

"Zoology": Part I., Descriptive, 4s. 6d. Part II., Practical. By B. P. Colton. (Heath.) 2s.

"Cambridge Natural History." Vol. VII. Edited by S. F. Harmer and A. E. Shipley. (Macmillan.) 17s. net.

EXPERIMENTAL GEOGRAPHY.

By A. T. SIMMONS, B.Sc.(Lond.)

Associate of the Royal College of Science, London ;
and

HUGH RICHARDSON, M.A.
Bootham School, York.

I.—MAP MAKING.

THERE is, fortunately, a growing belief that geography is to be regarded as a branch of science. The old method of considering it chiefly as a training of the verbal memory, which is best secured by learning by heart topographical pemmican, is falling fast into disrepute. Just as in other branches of science and in mathematics it has been usual for a long time to set pupils to work exercises—experimental and graphic—and to encourage them, from the results of these pieces of work, to deduce principles for themselves, so in geographical teaching the best results are secured by leading the pupils sometimes to discover, at other times to verify, from their own observations, as many as possible of the fundamental generalisations of geographical science.

The writers have nearly completed a school course of experimental and observational work in geography, designed to inculcate the application of the methods of science to what has been hitherto in many schools one of the most arid and uninviting of the subjects of the school curriculum. A few of the sections of this course will be published in the hope that other teachers, who are engaged in the pioneer work of rationalising the methods of teaching geography, may be led to criticise the plan adopted here, and to suggest improvements, so as to assist the dissemination of better methods of teaching.

It should be added that typical sections only have been selected, and though those published in a single issue of this magazine are connected closely, the selections published separately are not immediately correlated.

Apparatus required.—Tape measure. Drawing board, pins, paper. Strap or stout cord. Drawing instruments. Magnetic compass. Theodolite. Levelling staff. Plane table.

INTRODUCTORY.

(1) Draw from observation, but without measuring, a plan of your class-room, showing the position of the door, fireplace,

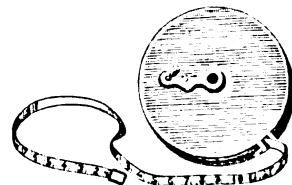


FIG. 1.—A Tape Measure.

windows, master's desk, and pupils' desks.

(2) Revise your drawing of the class-room. Measure all lengths with a tape measure (Fig. 1) if possible, or, if there is not one

available, take the measurements by means of a piece of string and find the length of string with the help of your foot-ruler, or measure in "boot-lengths," placing your feet heel to toe.

(3) Employing the measurements taken in the last exercise, construct on squared paper an accurate plan of the class-room and the desks in it (Fig. 2.)

(4) Draw from memory a plan of your school building showing corridors and class-rooms.

playing fields, or other suitable area. Begin the map by fixing a line, which is to be magnetic north and south. Put the board into position so that this line is in the real magnetic meridian, and, although you walk about, the board can always be brought back to its bearings. You must carry a compass with you; a pencil and a divided ruler are also necessary. Measure distances by paces, and draw the lines to scale with the least possible delay. But consider what scale to use. For instance,

will one millimetre to one pace be suitable, or will this make it impossible to get the whole map within the paper, or make the map ridiculously small? Estimate directions by eye, sighting over your ruler as a billiard player does over a billiard cue. Begin your map with the longest straight line on the estate. Stand at one end of the real line. Draw the line correct in direction, but indefinite in length. Now pace the line from end to end. Mark off its length to scale. Stand at the end of the line just paced. Consider where you will walk next. Place your plan so that the line you have drawn is in the direction of the real line you have just

walked along. Draw the direction of the line you are just going to walk. Pace this line and mark down its length to scale at once. Continue in the same way, first drawing the direction of a line, then marking it off to scale.

EXERCISE ON USE OF PROTRACTOR.

(9) Draw a horizontal line, AB, 3 inches long (Fig. 4). At the point B, below AB, draw a line, BC, 3 inches long, making

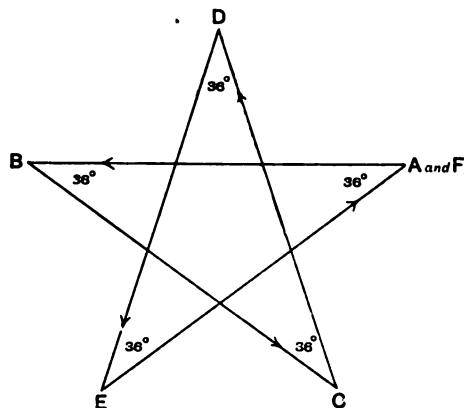


FIG. 4.

an angle of 36° with AB. At the point C, to the right of CB, draw a line CD, 3 inches long, making the angle BCD 36°. At the point D draw a line DE, 3 inches long, to the left of DC, making an angle of 36° with DC. At the point E, draw a line to the right of DE, 3 inches long, making the angle DEF 36°. Do the points F and A coincide? They will do if your drawing is accurate.

(10) Repeat the last exercise several times until A and F do coincide at the end of the drawing.

ROAD SURVEY.

(11) Walk along a high road, making a map of the road as you go. Distance is to be measured by counting paces; direc-

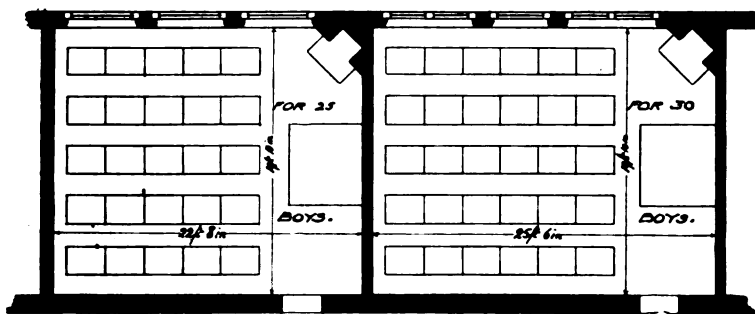
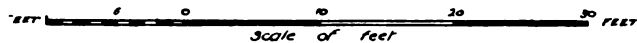


FIG. 2.—Accurate Plan of Class-room.

(5) Draw from memory a plan of the school playgrounds, cricket field, garden and surroundings.

(6) Go over your plan of the buildings, measuring, with a tape measure if possible, the size of each room, or failing that a foot-ruler, or measure it in boot-lengths, and find out afterwards how many inches long your boots are. Mark the dimensions on each room.

(7) Make on squared paper an accurate plan of the school buildings and grounds (Fig. 3), copying from your sketch.

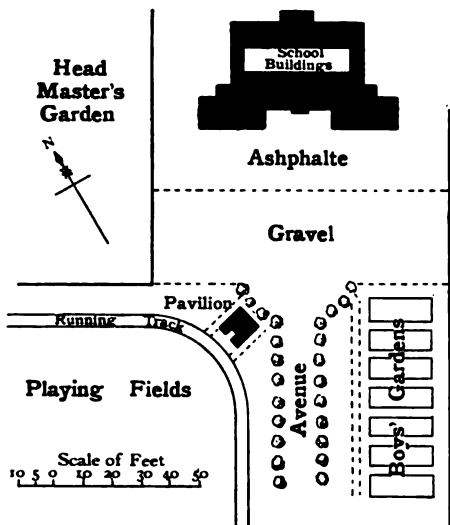


FIG. 3.—Accurate plan of school buildings and grounds. (A. E. Munby.)

SURVEYING BOARD.

(8) Take the first opportunity to try out-door surveying. Arrange your apparatus in the following way: Sliding a drawing-board over your shoulder by a strap or loop of stout cord, so as to form a portable table. Pin a sheet of paper on the board. You can now draw whilst standing. By the aid of the table thus prepared proceed to make a plan of your playground,

tions are to be determined by the compass. Look forward in the direction you are about to go, determine it by the compass, and at once draw a line in the *direction you are about to follow* on your map. Pace as far as you can in that straight line. Mark off at once the *distance you have gone* on your map. Then sight forward again and proceed as before.

(12) Draw a map on a scale of one mile to one inch from the following notes. Read from the bottom of the column upwards.

A high road leads N.E. from a city.

Objects seen to the left, and the distance or bearing of the same.	Distance from the city.	Objects seen to the right, and the distance or bearing of the same.
	Miles.	
Church due W.	7	Church, 1 mile E.
Wood	6½	Road S.E.
Inn on road	6	Windmill, ½ mile S.E.
Road W.	5½	
Castle due W.	5	Railway to E.
Woods	4½	Tall chimney, S.E.
Railway to W., level crossing ..	4¾	½ mile, farm.
Church spire due N.	3¾	½ mile, school.
Inn on road	2½	High road to S.E.
Second-class road to N.W.	2	
Castle due N.	1½	
High road to N.W.	1	
Church with tower, ¼ mile	½ mile.	

(13) Walk one mile down any straight road near your school. Estimate distances in paces. Take notes as shown in the above table of objects seen to your left and right, making the best guess you can at the probable distances of those objects not easily accessible. Draw a map on returning to school.

BASE LINE AND ANGLES.

(14) Find the longest straight level line you can on the ground near your school. Pace its length. Note what church spires, cairns, chimneys, or other prominent and clearly defined objects, can be seen from each end of the line. Find the compass bearing of each object from each end of your base line. Which objects appear in exactly the same direction from both points of view? Which have changed their position?

positions from each wicket make the following angles with the line joining the wickets, which is 22 yards long (Fig. 5).

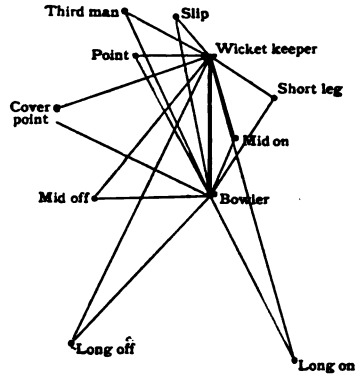


FIG. 5.—Plan of a Cricket Match.

	Angle at bowler's end.	Angle at wicket-keeper's end.
Slip	10 deg. to left	130 deg. to right.
Third man	30 " " "	110 " "
Point	60 " " "	90 " "
Cover	90 " " "	70 " "
Mid-off	100 " " "	40 " "
Long-off	140 " " "	20 " "
Long-on	150 " to right	15 " to left.
Mid-on	30 " " "	20 " "
Short leg	30 " " "	60 " "

TRIANGULATION.

(17) Fig. 6 represents a number of observations made with the help of a theodolite. Copy the figure, making AB one inch in length and vertical. When your drawing is complete, measure the lengths of PQ, RS, TU in inches and hundredths.

When your answers are compared with those of your school-fellows you will realise how extremely difficult it is to get your answer right even to the nearest tenth of an inch.

(18) Suppose you took extreme care in setting out the angles.

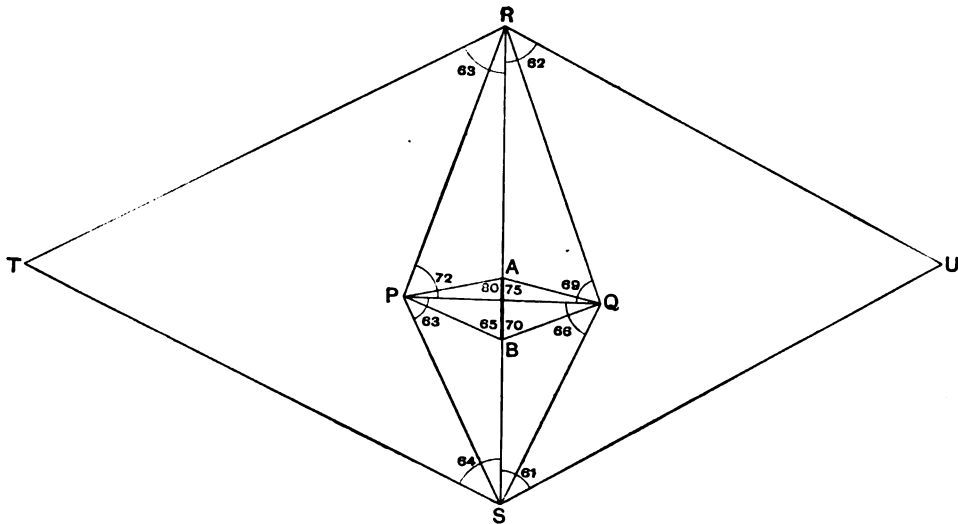


FIG. 6.

(15) Draw a plan of a cricket match, marking and naming the positions of all the fielders as you would place them for medium bowling.

(16) Draw an accurate plan of a cricket match on a scale of 1/16 inch to 1 yard, placing the men so that lines drawn to their

Find whether it is possible to get a closer agreement on repeating the exercise.

(19) Construct a figure like that shown in Fig. 7. Draw PQ horizontal and one inch in length. Construct triangles with the angles shown in the illustration. Measure on your

drawing the lengths of AB, CD, and EF in inches and hundredths. If the distance PQ represents 100 yards, what will be the lengths of AB, CD, and EF in yards?

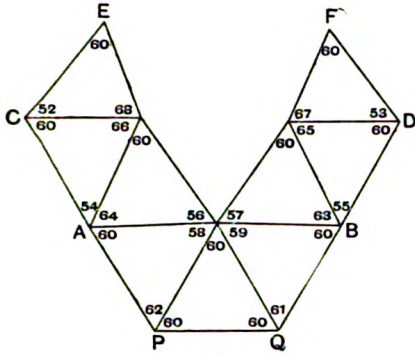


FIG. 7.

(20) Compare your answers with those of the rest of the class. On which of the lengths AB, CD, or EF, do you agree most closely? Why is it that one of these distances is easier than the others to measure exactly?

PLANE TABLE¹ EXERCISES.

(21) Fit up a model plane table by screwing your drawing board to a camera tripod (Fig. 8). Measure with a chain a

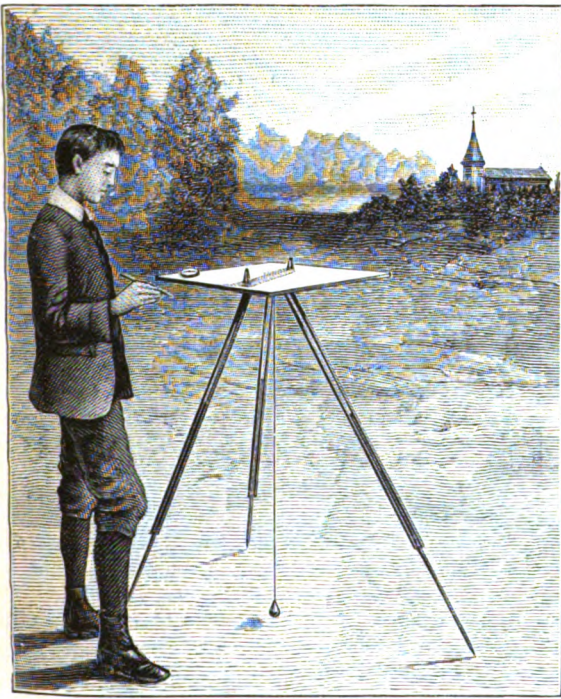


FIG. 8.—A Model Plane Table.

long, straight line on your football or cricket field as base. Mark the ends of this line with cricket stumps, called A and B on the plan (Fig. 9).

Fix the plane table at A. Use a steel bicycle bearing-ball to level it. For a ruler use by preference one through which nails

¹ A satisfactory and economical plane table may be obtained from Mr. J. H. Steward, optician, 406, Strand, London, W.C.; the price of the table and tripod is £1 7s. 6d., of ruler with sights 14s. 6d., compass in oblong box 7s. 6d., complete £2 9s. 6d.

have been put to make sight. Bring the board to its bearings and mark the N., E., S., W. points on the paper. Draw the direction of the line AB. Mark its length to a suitable scale, say, one inch to one chain. Now point the sighted ruler to any neighbouring objects the positions of which can be exactly

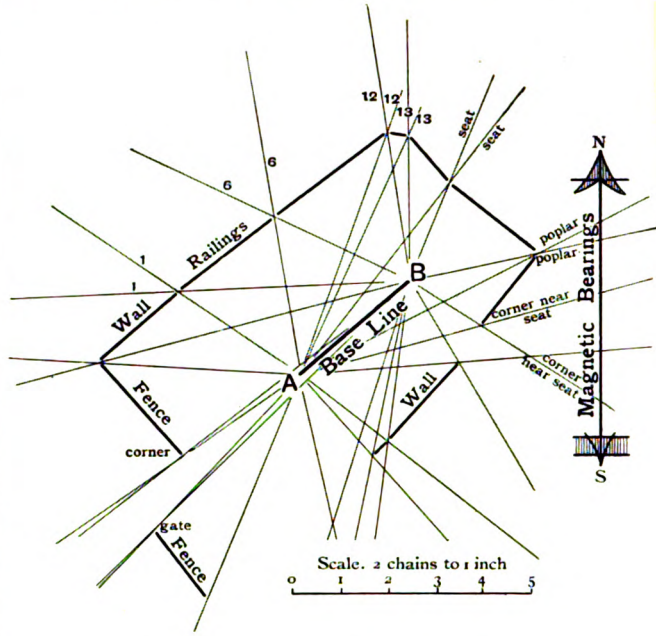


FIG. 9.—Plan of Cricket Field. Surveyed with chain and plane table. Length of base, 3 chains. Radiating lines were drawn from each end of the base lines to posts, corners, or other prominent objects.

defined, such as seats, trees, gates, and draw radiating lines from A to show their directions. Mark on each line to what it points.

(22) Remove the plane table to B, bring it to its bearings again, and from B draw another set of radiating lines to the same points. The intersections of the two sets of radiating lines will fix the positions of these points on the map.

(23) Choose any continuous walk, path, or road, which will bring you back to your starting point. Walk round this with the plane table, mapping the direction and distance of your walk as a series of straight lines AB, BC, CD, &c. At each stopping point, A, B, C, &c., notice and map the distance and direction of walls, fences, roads, &c. The test of the accuracy of your survey is to see whether it ends where it began, or whether there is an unexplained gap.

MEASUREMENT OF INACCESSIBLE DISTANCES.

(24) Hold a metre, or yard stick upright in the sunshine. Mark the end of its shadow, and measure, as carefully as possible, the length of the shadow. Express as a fraction the relation of the length of the stick to the length of the shadow, thus:

$$\frac{\text{Length of stick}}{\text{Length of shadow}} = \text{---}$$

(25) On the same occasion, immediately after the last exercise, pace the length of the shadow of (a) the highest tree, (b) the highest building near you. Using the result of the last exercise, calculate the height in paces of the tree and the building.

(26) Determine the length of your pace in inches. Reduce the heights of the tree and the building to feet.

(27) If there is a river or wide stream in your neighbourhood, proceed to determine its width in the following way. Choose a point, B, opposite a tree or other definite point on the opposite

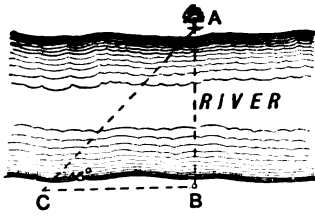


FIG. 10.—Measurement of width of a river.

bank of the river. Push a stick into the ground at B as a marker. Walk in the direction BC, at right angles to AB, counting your paces as you go, until the angle ACB coincides with the 45° angle of a set square held to the eye. Then, knowing CB is equal to AB, determine the width of the river in paces and in feet.

THE THEODOLITE.

The following exercises are possible in schools possessing a theodolite, and wherever such an instrument can be borrowed or hired, as can easily be arranged with an instrument maker.

(28) Set up the theodolite on its tripod so that the plummet is exactly above the mark on the floor.

(29) Use the four screws to set the circle level.

(30) Using the fine adjustment, set the arrow of the vernier exactly to 360° . Now use the travelling microscope to test the exactness of your setting. Fix both clamps.

(31) Set the telescope exactly horizontal by means of its attached level. Take the reading of the vertical circle.

(32) Move the telescope until the cross-wires in the eye-piece lie exactly on some fixed object (e.g., weathercock).

(33) Read the horizontal angle on both sides of the instrument as exactly as you can, and take the average.

(34) Determine the horizontal angles between certain fixed points indicated by your teacher. First clamp the horizontal vernier at 0° and unclamp the horizontal limb and the telescope. Direct the telescope to the first point, accurately bisect it by the cross wires, and clamp the horizontal limb. Now unclamp the vernier and carefully move the telescope, touching only the lower supports until the second point is bisected. Read both verniers and record the average reading. This gives the horizontal angular distance between the first two fixed points. Now bring the horizontal verniers again to zero and clamp. Unclamp the horizontal limb and turn the instrument until the second object is again intersected. Again clamp the limb and unclamp the verniers and bisect the third object and take its readings. This will give the angle between the second and third objects. With the other fixed objects proceed in like manner. Finally, take the last object as the zero point, and measure its angular distance from the first object. Then, if all the measurements have been accurately made, the measured distance from the first to the last object should equal the sum of all the smaller angles. If not, all the measurements must be gone over again until the mistake has been detected and rectified.

(35) Set the horizontal circle of the theodolite level. Fix the lower clamp. Leave the upper clamp free. Set the telescope level and clamp the vertical. Now swing the telescope round. All points seen on the horizontal wire should be on the same level as your eye.

(36) Get a schoolfellow to look through the theodolite whilst you carry a levelling staff (Fig. 11). First place the staff close to the theodolite and measure the height of the telescope above the ground. Now move the staff to other positions. When observed by the telescope it is possible to tell by how much the ground is higher or lower elsewhere.

(37) Put in a straight row of six cricket stumps about twenty paces apart across your cricket field. Find whether this line is really level.

(38) Find whether your cricket ground is really level in every direction.

(39) Find what inequalities of level occur on your football ground.

(40) Failing a theodolite, set up a water level (Fig. 12) to find the position of your horizon.

Take two glass tubes of about $\frac{1}{2}$ inch internal section and connect them by india-rubber tubing. Partially fill the arrangement with water. Fix up with retort stands. Now sight past the water levels. Set the level of the water 1 foot above the bench top or 4 feet above the floor. Use the water level to find what points on the walls of your class-room, or visible through its windows, are on the same level as the water surface.



FIG. 11.
A Levelling Staff.

COMPARISON OF TRUE NORTH AND MAGNETIC NORTH.

(41) Set up the theodolite at night so as to view the pole star. Make the usual adjustments as in previous exercises. Set the vertical cross-wire on the pole star. Bring the horizontal circle of the instrument to 360° . Observe and measure as accurately as possible the deviation of the compass needle on the instrument.¹ Use a bicycle lamp for reading the scales of the theodolite.

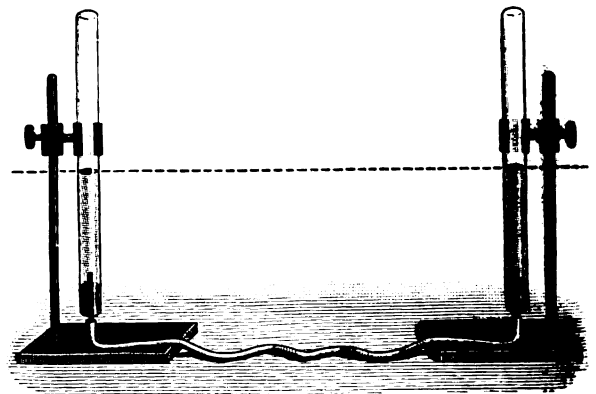


FIG. 12.—A Water Level.

(42) Set the pole star on the horizontal wire of the eye-piece of the theodolite. Read the altitude of the pole star. Record this number for future reference; it is roughly equal to the latitude of your place of observation.

(43) Repeat, if possible, the observations on the two preceding exercises an hour later. Do you obtain the same results?

¹ The pole star does not define exactly the position of geographical north. The following table from "Hints to Meteorological Observers," by W. Marriot (Stanford) shows at what times in different months the results of the exercise will be practically correct.

The pole star is practically due North at the following times:

In January and July	at 6 a.m. and 6 p.m.
" February " August	" 4 " " 4 "
" March " September	" 2 " " 2 "
" April " October	" Noon and Midnight.
" May " November	" 10 a.m. and 10 p.m.
" June " December	" 8 " " 8 "

HISTORY AND CURRENT EVENTS.

THE serious student of current or other history should have in his mind a systematic view of the problems he has to solve. Thus, and thus only, will he be prepared to collect from the cinematograph of the world which his newspaper affords him the materials which will form the basis of his theory of politics. Some events of the last month will illustrate our point. What are the objects of government? What purposes should it serve? Two excellent statements of these have been afforded us lately. The young King of Spain "expressed a wish to ameliorate the lot of the working man and settle the question of a living wage." The British Commissioner in Uganda says, "the general results of the year 1903-4 may be summed up in increased efficiency of administration and the maintenance of undisturbed peace and order, in a satisfactory increase of revenue and decrease of expenditure, in a large expansion of trade, particularly in imports, and in a general advance in material and social well-being." Thus, for internal matters. For external, we have Admiral Colomb, in a letter on the respective shares which Great Britain and the Colonies contribute to the support of the Navy, pointing out that the object of this institution is to clear the seas of enemies to British commerce.

WHAT are the moral bases of a State? What are the ties which bind together in willing unity the various members of a country, specially if that is a large and scattered one? Mr. Irvine, an Australian statesman, says that "reciprocity in trade is a stopping-stone to political union. The ties of sentiment are already attenuated to such a point that they are incapable of standing the strain of a struggle with self-interest." So is the modern doctrine, but in the past there used to be other ties. Religion was a great one in the Middle Ages in Europe, and still is in Asia; and older still, if possible, is the feeling of race-unity or relationship, typified often by community of language. It has been remarked that the interest of Sir Wilfrid Laurier's recent victory in the Canadian elections is far greater than the mere conflict of party politics. He is now the chosen chief of all Canada, and no longer relies for his power on a "solid Quebec," *i. e.*, on the French nation there. Race interests are retreating into the background. But Italians are wanting an Italian university in Trieste, and Transvaalers want to exclude British Indians from the Colony. While, as a humorous illustration, comes the proposal, as a counterblast to Sir Edward Clarke's suggestion of "Usona" as a name for the United States of America, that this country should be called "Ukogbai," to satisfy the non-English inhabitants of the British Isles.

TOPOGRAPHY—it is a commonplace nowadays—plays a large part in the foundation of states and in determining their characters. The huge empires of Asia arise in far-extending plains, the city states of Hellas were possible only in a country of mountains and narrow seas. "We talk," said Lord Milner recently, "of a closer South African union, but, perhaps, we do not consider how greatly of necessity it is impeded by purely physical difficulties—the immense distances which separate the principal centres preventing the easy and constant intercourse and interweaving of interests and the free interchange of ideas so important in the growth of national life and national sentiment." But in these days of physical science and triumph over Nature, these hindrances tend to diminish. The sea is now a uniting rather than a separating force. Otherwise the British Empire would be impossible. Communication by telegraph has revolutionised methods of government as well as those of commerce. And Lord Milner concluded the speech from which we have quoted by a reference to railways as another method of lessening distances. We measure distance now, not by miles,

but by hours and days, and Bombay is now no farther from London than Inverness used to be.

DISTANCE plays a part, too, in another problem of politics—the organisation of public opinion. The Russian Zemstvos have recently been asking for a revolution in Russia, of which a part is to be the institution of "representative government"—some kind of Parliament. The State of Mysore in S. India has such an assembly and Travancore is now following suit, but these are comparatively small states, and their population is largely homogeneous. What parliamentary institutions *may* lead to is seen in the chaos of nations in Austria-Hungary. Any country that is small enough and homogeneous enough is capable of representative assemblies, for the wisdom necessary is attainable by practice to all who will allow themselves to be educated thereto. But where size and variety interfere, resort must be had to other means if the government is to keep in touch with public opinion. The Government of India announces the inauguration of such a system in the formation of a Press-room or office in which newspaper conductors may see copies of current Government correspondence, specially that which contains discussions of proposed changes in law and administration. The Press is thus not merely a "fourth" Estate in India, but is to be the only one.

ITEMS OF INTEREST.

ON the first day of the Headmasters' Conference at Christ's Hospital, two topics should have produced important discussions, but one of the two fell flat. On the subject of the Consultative Committee's scheme for secondary-school certificates, either the authorities of the Conference had not clearly set the work, or the recalcitrant headmasters had refused to do it; anyhow the work was not prepared, and a dull lesson inevitably ensued. But there was more interest in the discussion of the policy of sending elementary teachers to secondary schools in lieu of pupil-teacher centres. There was no inclination whatever to dispute the advisability of this plan, but as Mr. Swallow (Chigwell) pointed out, this in itself is not enough. We do not want boys sent to secondary schools ear-marked from the beginning as future elementary teachers; what is wanted is that when boys are getting towards the end of their time at a secondary school they should deliberately select as their life's work teaching in our elementary schools. This kind of downward action is very desirable. But of course it is a moot point whether boys in any great number will deliberately choose in this way. At present it looks as though remuneration and general conditions of service will have to be vastly improved before well-educated boys will, at the age of seventeen, walk with eyes open into elementary teaching as a life-long profession.

THOUGH the debate on the advisability of making school cadet corps compulsory produced good speeches, the other outstanding topic of this year's conference was undoubtedly Mr. Lyttelton's motion against the Cambridge Syndicate's proposals exempting candidates from Greek in the Previous examination. Mr. Lyttelton some years ago was one who raised his voice in favour of relaxation, but now that he has realised how far the tendency is likely to take us he has sensibly changed his attitude. His point was that no fair substitute for Greek has yet been offered. The proper alternative for Greek is certainly not another language; for if a boy's mind is incorrigibly non-linguistic it cannot be trained better on French or German than on Greek. A better alternative to Greek would be handicraft or science, a subject which gives a mental training completely different. We have no evidence that any large number of boys

have been excluded by Greek from the Universities. Dr. James, Mr. Moss, and Dr. Rouse followed very emphatically on the side of the retention of Greek. The first was full of alarm at the rapidity with which Greek was already being dropped in preparatory schools. The Conference by its votes showed plainly that it will still hold to Greek as fast as it can.

A LIST of the books prescribed for the local examinations of the University of Cambridge in December, 1905, was published in *THE SCHOOL WORLD* for October last. The regulations for these examinations, published at the end of December, include several modifications. Under certain conditions other books may now be substituted for those prescribed in the various subjects of examination. Important changes have been made in English history for all the examinations, and in the English and mathematical sections for senior candidates. Arrangements will in future be made for examining junior as well as senior candidates in spoken French and spoken German. In French, German, and Spanish for junior and senior candidates higher marks will in future be assigned to the unprepared translation which is given as an alternative for set books than are assigned to the set books themselves. Dutch has been added as a subject of examination for seniors, and Greek as a subject in the preliminary local examination. Zoology is no longer included as a subject of examination for juniors or seniors. The total number of candidates, 17,777, who entered for these examinations last month exceeds by more than 500 that of any previous year, a decrease in the number taking the preliminary examination being more than counterbalanced by an increase in the number taking the junior, senior, and higher examinations.

THE North of England Education Conference of 1905 is to be held on January 6 and 7 at Liverpool, and a large attendance may be expected. The two chief subjects of discussion are to be leaving certificates and scholarships. These debates will occupy the two morning sessions. The first discussion will be presided over by Lord Stanley of Alderley, and the papers on the certificate question will be read by Messrs. G. Alexander and Owen Owen, and by the Rev. J. B. Lancelot. The discussion is to be opened by Sir Oliver Lodge and Mr. G. Sharples. Sir William Anson will take the chair at the meeting which is to deal with scholarships, and the papers will be by Miss Burstall and Dr. Macnamara. The discussion is to be opened by Messrs. C. H. Gore and W. Edwards. Among other subjects which are to occupy the attention of the conference are manual training, the teaching of geography, child study, the teaching of domestic science, school games with special reference to day schools, and the teaching of English. We notice among those who will read papers on these subjects the names of Principal Reichel, Mr. Mackinder, Prof. Sherrington, and Mr. J. L. Paton.

THE next annual meeting of the Incorporated Association of Assistant-mistresses in Public Secondary Schools will be held at University Hall, Gordon Square, W.C., on January 14th, 1905. In addition to routine business and the delivery of the president's address, a discussion will take place of the scheme for school certificates of the Consultative Committee, with especial reference to the following points: (a) "That it is not desirable that examinations for such certificates should be conducted by . . . a single central organisation." (b) The constitution of the examining body or bodies. (c) Senior and junior certificates. (d) "That no certificates for honours, or marks for special distinction, should be given."

AT a meeting of Congregation of the University of Oxford, on November 29th, a statute was promulgated to exempt candidates for honours in mathematics and natural science from Greek in Responsions and in the Holy Scriptures examination,

and to allow them to substitute French and German. The proposition was lost ultimately by a majority of 36, the numbers being—for, 164; against, 200.

THE executive officer of the London Education Committee, Mr. Robert Blair, has made application to the committee for seventy-two permanent assistants, and of these thirty will take the place of thirty temporary clerks and nine the place of eighteen office youths. In addition six stocktakers are required. There has, owing to the new Education Act, been an enormous increase of work, and the committee recognise that large additions to the administrative staff are necessary. The committee for the present recommend:—(a) That authority be given for the appointment of twenty-five fourth-class assistants, four second-class assistants, and four first-class assistants in the executive officer's branch. (b) That thirty temporary clerks engaged in the executive officer's branch on October 1st, 1904, be replaced by thirty fourth-class assistants as soon as practicable. (c) That eighteen office youths now in the executive officer's branch be replaced by nine fourth-class assistants as soon as practicable. (d) That authority be given for the appointment of two needlework-room assistants in the executive officer's branch. The report of the Education Committee to the London County Council states that in addition to clerical assistants the committee think that two unclassified assistants are required. These should be men with a university or equivalent training, experienced in educational administration. One should be styled assistant executive officer and the other should be a principal assistant. These officers would undertake some of the more important administrative work entrusted to the executive officer—work which he can guide, but which he has not the time actually to deal with in detail.

WE are glad to be able to congratulate the French examiners at the recent Army Entrance Examinations on their paper. For the first time for many years the paper is quite free from the unsuitable matter it has too often contained. The first piece of translation into English consisted of twenty lines on "Le confort anglais," the second piece of eighteen lines on "Le Maître d'Armes Robert." In neither were there any words that a well-prepared candidate should not be presumed to know. The piece for translation into French was an historical extract on the Treaty of Frankfurt, 1871. It contained a few conversational phrases, but was quite a suitable piece for the type of candidate at this examination. We recollect with dismay the curious monstrosities that have been set in the way of prose in the past, extracts from Dickens, Goldsmith, &c. The third part of the paper consisted of three questions, the first requiring twelve parts of irregular verbs, the second the translation of five easy idiomatic sentences into French, and the third a short essay of ten or twelve lines on the most striking feature of the Russo-Japanese war. The papers on the whole have been much easier than usual this time; this may be due to the fact that a change in the regulations comes into force next November, and the Commissioners may wish to pass all they can. The history papers were an exception, however, and show the need of moderators in the optional subjects.

At the Southend County Court, on December 9th, Judge Tindal Atkinson ruled that a schoolmaster is not a gentleman. The question was raised on a point whether a witness should be allowed, on taxation, costs under the head of "gentleman" or "professional man" or on the lower scale of "tradesman." In asking for the higher scale, the solicitor said the witness is a schoolmaster, a man of considerable attainments in educational matters, the proprietor of a large school, a player of the cello, and a man of refinement and literary and artistic attainments. The judge ruled, however, that the schoolmaster is not entitled to the higher scale. He is a gentleman in fact, only he is not a

gentleman in law. It is, at least, comforting to know that, in whatever way the schoolmaster is regarded from the legal point of view, he is "in fact" a gentleman.

THE centenary of Mill Hill School will be celebrated in 1907, and a centenary subscription list has been opened with an anonymous gift of £10,000. Mill Hill School was reconstituted in 1869, and from that time adopted a broader policy, aiming chiefly at becoming an unsectarian public school.

THE Commercial Education Committee of the London Chamber of Commerce has received the following further contributions to the expenses fund in aid of its educational work. Messrs. N. M. Rothschild and Sons, £100 per annum, for three years; the Company of Skinners, £25; and the Company of Grocers, £25. A sum of £450 is still required to meet the current year's expenses.

MR. H. J. MACKINDER, director of the London School of Economics, gave to a large audience at the Whitehall Rooms on December 7, at the invitation of the Secretary of State for the Colonies, an account of a scheme of visual instruction as to the mother country for use in the schools of the British Colonies. The scheme was originally suggested by Prof. Sadler during his tenure of office of Director of Inquiries to the Board of Education. The idea was taken up by the Colonial Office when Mr. Chamberlain was Secretary for the Colonies, and was afterwards considered by a small committee. The first draft of a syllabus of slides was drawn up by this committee, and, with the view of making a small experiment, it was submitted to the three Crown Colonies of Hong-Kong, the Straits Settlements, and Ceylon. The endeavour is to make this nation intelligible as regards its ideals, and to show to those of our fellow-subjects who are abroad that we wish to be good and to do good; and, on the other hand, to show them that we are strong. The seven lectures included in the syllabus are as follows: I.—The Journey from the East to London. II.—London, the Imperial City. III.—Scenery of the United Kingdom. IV.—Historic centres and their influence on national life. V.—Country life and the smaller towns. VI.—Great towns, the industries, and commerce. VII.—Defences of the Empire. This course of lectures is designed for use primarily in the Eastern Colonies. The slides to illustrate the lectures are good, and have been selected so as to instruct as well as to interest. The idea is an excellent one, and is worthy of the success it seems likely to command.

THE London County Council has arranged to hold its annual conference for teachers at the Medical Examination Hall, Victoria Embankment, W.C., on January 5 to 7, inclusive. There will be two meetings each day from 11 a.m. to 1 p.m., and 2 p.m. to 4 p.m. On January 5 the morning subject is to be the teaching of arithmetic, and in the afternoon the teaching of dictation and reading. The next day will be devoted to art subjects: in the morning an address on art teaching in Japan will be delivered, and in the afternoon the discussions will be upon the influence on handicraft of art teaching in elementary and secondary schools, and upon the art training of the artisan. The arrangements for the third day have been made in conjunction with the Froebel Society of Great Britain and Ireland. The subject for debate will be true and false applications of Froebel's principles: in the morning with special reference to the teaching in schools for infants, in the afternoon to the teaching of children over seven years of age. Application for tickets of admission should be made to the Chief Inspector, Education Department of the London County Council, Victoria Embankment, W.C.

DURING the twelve years' existence of the Pupil Teachers' University Committee, of the forty-five students whom it has

assisted, forty have taken university honours. Five have secured first classes at Oxford, and seven at Cambridge University. The next examination for six scholarships is to be held this month, and intending candidates should write to Mr. A. H. Baker, 28, Cautley Avenue, Clapham Common, S.W.

THE tenth annual report of the London Branch of the British Child-study Association, which has reached us, shows that the membership is increasing, and the high standard of the work accomplished in previous years is maintained. The Association seeks to interest parents, teachers and medical men in the study of children, in the belief that it is only by a more precise knowledge of the natural process of the unfolding of the human mind, and of the way in which this is modified by the environment, that further advance can be made in elucidating the principles of a natural and sound education. The honorary secretary of the London branch is Miss Kate Stevens, Carlisle House, Dartmouth Park Hill, N.W., to whom application for membership may be made.

THE attention of teachers in secondary schools is specially called to the impending expiration of the "grace" clauses of the Regulations for Registration in Column B. Applications under the ten years' service clause must be received at the Teachers' Registration Council's offices, 49 and 50, Parliament Street, S.W., on or before March 5, 1905. Applications under the clause by which training is not obligatory must be received on or before March 5, 1906. Copies of the forms to be filled in may be obtained on application to the Registrar.

SOME interesting particulars as to the salaries of men and women engaged in the various grades of the teaching profession in Canada are given in an article by Miss Jean N. McIlwraith in the *Cornhill Magazine* for December. "Presidents of universities sometimes get as much as £1,000 a year, but rarely more. Professors can earn £600, their associates £360 to £500, lecturers £160 to £240, and the fellows, temporary student-teachers, get £100. Principals of high schools receive annually £500 or £600, while the average male teacher gets from £240 to £260 in towns, £150 to £240 in the country, and a female high-school teacher earns from £100 to £200." Before comparing these amounts with salaries at home, it is necessary, in order to arrive at a fair conclusion, to know what the cost of living is, and on this head Miss McIlwraith gives full information. The same issue of the magazine contains an excellent article upon Bishop Ridding as headmaster, by an old Wykehamist.

THE paper read by Prof. Sadler to a meeting of the Sociological Society on December 13 was an important contribution to educational science. Prof. Sadler began by discussing the question: Has not one great obstacle to the advance of educational science lain in our too habitually thinking of schools as if school-work were an end in itself, and in our discussing school problems too little in relation to their social context and with too vague regard to the actual needs of the callings for which the different types of school ought definitely to prepare their pupils? He proceeded to show that all true education has a double purpose, namely, the development of the moral personality, of the physical powers and of the intellectual aptitudes of the individual; and the fitting of the pupil skilfully to perform the duties of some definite calling, or type of calling, in life, and worthily to discharge with courage and composure of mind the tasks likely to devolve upon him or her as a member of a family, or of a local community, the claims of which are based upon physical neighbourhood, or of the nation, or of some church or other ethical fellowship, based upon affinity of spiritual need but not necessarily conterminous with any one country.

SCOTTISH.

THE installation of Lord Kelvin as Chancellor of the University of Glasgow in succession to the late Earl of Stair was carried through in the Bute Hall before a large and widely representative attendance. In honour of the occasion a number of honorary degrees were conferred, the most distinguished recipients being perhaps Her Royal Highness Princess Louise and Guglielmo Marconi, the discoverer, or at least the perfecter, of wireless telegraphy. Lord Kelvin, in returning thanks for the honour conferred on him, said that to be chancellor of one of the universities of our country was a distinguished honour, but for him to be chancellor of his beloved University of Glasgow, with which he had been connected for sixty-seven years, was more than an honour, it was the crowning glory of his life.

SIR HENRY CRAIK, Secretary to the Scotch Education Department, in presenting the prizes and certificates to the students attending the Glasgow Athenæum Commercial College, said that in Glasgow they had three great central institutions for technical education—one for science, one for art, and one for commerce. The Athenæum had taken its right place in that trinity of colleges, but, even more than the other institutions, its successful working depended on the help and the interest of commercial men themselves. Without their aid this college could not progress or be the success they hoped. They wanted the help of business men not only at the Council Board in drawing up their schemes of work, they wanted them to insist on a thorough education in the case of those they took into their employ. They should make attendance at the courses given in this or similar schools a primary condition of the acceptance of anyone into their employment, and they should not only insist on the condition, but adequately reward the fulfilment of it. They should remember both that education pays and must be paid for.

THE autumn meeting of the Classical Association of Scotland was held in the Greek class-room of Edinburgh University. Prof. Ramsay, president, in his opening remarks, called attention to the successful inauguration of the English Classical Association with objects identical with their own. The main object, as the English president, the Master of the Rolls, had happily put it, was to maintain the importance of classical education as essential to the higher intellectual life of the nation without any intolerance or antagonism to other subjects. Prof. Ramsay, after showing the point of absurdity that might be reached by modern advocates of cheap and shoddy courses of study, founded on what were called the new methods, said that research was one thing and education another, but at the present day the two things were being confused. Their object in teaching the classics was to refine and inspire the young mind of the nation, to help them to appreciate the beauty of language and delicacy of thought which formed the charm of all literature, and not to make them plough the sands of so-called analysis.

PROF. HARDIE read a paper on "The Pronunciation of Latin and Greek in Schools and Colleges." Prof. Hardie said that in pronouncing Latin Scotsmen had two difficulties to contend with—an unaccented long syllable and an accented short one. The difficulties in regard to Latin pronunciation in America had been so great that an eminent authority, Prof. Bennett, of Cornell University, advocated neglecting quantity altogether, because even approximately correct results could only be secured by the sacrifice of an amount of time altogether out of proportion to the value of the subject. Prof. Hardie, in combating this view, thought that classical studies would forfeit such respect as they still enjoyed if they proposed deliberately to be content with inaccurate and incomplete knowledge. He was firmly persuaded that if quantity was attended to from the

earliest stages it would not require any great expenditure of time. He concluded by making the following definite suggestions:—(1) The difficulty of reading verse was lessened by reading slowly. (2) They should avoid the pedantic and futile attempt to reproduce ancient pronunciation in every detail. (3) Steps should be taken to secure some uniform system of pronunciation. (4) The practice of learning verse passages by heart should be revived.

PROF. RAMSAY, in opening the discussion on Prof. Hardie's paper, said that he found such diversity of pronunciation among his students that he had to accept any pronunciation provided the student was consistent in its use, but unfortunately that was seldom the case. Prof. Butcher hoped the Association would draw up some short outline of a standard pronunciation for Scotland. The English Classical Association had this question under consideration, and he thought it would be well to have united action in the matter. He did not think it possible to get an international standard of pronunciation, but surely it was not too much to ask that Englishmen and Scotsmen should understand one another's Latin. In regard to pronunciation of Latin, England was in a much more chaotic condition than Scotland. At the English universities each college had three or four different ways of pronunciation, depending upon the school from which the fellows of the college came. He thought such diversity was most ludicrous, and he hoped that in the near future they would be able to hit upon a system of pronunciation that, if not absolutely right, would be approximately correct, and would approve itself to all teachers in the three Kingdoms.

PROF. DARROCH delivered the inaugural address to the Women's Debating Society of Edinburgh University, choosing as his text, "Two ideal ends in the education of women." He introduced his subject by showing that the ideal end of a woman's education must be largely determined by her future position and duties in life. According to Mr. Morley, there were three possible ends for which she might be trained: (1) As the wife and companion of man. (2) As the mother and trainer of children. (3) As a human being. As a typical illustration of an education directed solely to the first object, Prof. Darroch instanced Sophie in *Emile*. She was to be gentle, ready at all times to give up her own will, sympathetic, graceful and pleasant to look upon. She was, in short, to be "a mere incident in a man's career." The women of the Italian Renaissance afforded many types of the third class, "Woman educated as a human being." The women of this time were in point of learning the most brilliant the world has ever seen, but their moral standard was of the lowest. Prof. Darroch showed that both conceptions were one-sided and therefore false. We must, if we are to attain the highest results, consider women both as possessing reason and also as having certain duties and functions to perform in life. He thought there was a danger in the higher education of women at the present day aiming too much at economic independence. This, though right and necessary, was only a proximate end, and the true end is to educate woman in her entirety, which would result in raising the social ideal in a higher unity in married life.

THE intolerable situation created by the decision in the Scottish "church case" is likely to have at least one satisfactory result. Several conferences have taken place between Sir Henry Craik and Mr. Struthers, representing the Education Department on one hand and the Education Committees of the churches on the other. Although no official report has been issued, it is generally understood that an agreement has been arrived at whereby the training colleges will be handed over to the Government, not absolutely but at a nominal rent. The Government on their part will undertake to continue the system

of religious instruction which has always existed in these colleges, and which can hardly be regarded as denominational. The training colleges will not be managed directly by the Education Department, but will probably be handed over to a Committee of Management representative of all educational interests. The delay in announcing the agreement is probably due to the necessity for consulting the Treasury as to ways and means.

MR. JOHN STRUTHERS, C.B., has been nominated to be Secretary of the Scotch Education Department and Director of Higher Inspection in Scotland upon the retirement of Sir Henry Craik, K.C.B., which took place on December 22. Mr. George Todd is appointed first assistant-secretary; and Mr. George Macdonald is appointed second assistant-secretary, with head-quarters in Edinburgh.

IRISH.

THE Department of Agriculture and Technical Instruction for Ireland, through the kindness of the Geographical Association, arranged for an exhibition, from November 23 to December 3 in the Dublin Museum of Science and Art, of a collection of typical maps, views, slides, books, and other appliances useful to teachers of geography. The object of this interesting exhibition was to assist teachers who are striving to make geography a subject of real educational importance, and in connection with it the Department arranged for three lectures to be given free to teachers in the theatre of the Royal Dublin Society. The lectures were given by Mr. George Fletcher, on "Aims and Methods in the Teaching of Geography"; by Prof. Grenville A. J. Cole, on "The Meaning of a Map: a Study in the Heart of Europe"; and by Prof. G. H. Carpenter, on "Animal Geography."

THE Hermione Lectures were delivered this year in the Alexandra College by Mrs. S. Arthur Strong, LL.D., on "Roman Triumphal Sculpture, from Augustus to Constantine." They were four in number, the first being on "The Roman Artists in the Reign of Augustus and their relation to their Alexandrian Predecessors"; the second, on "Decorative Sculpture and Painting, and the Arch of Titus"; the third, on "The Art of the Reign of Trajan"; and the fourth, on "The Twilight of Pagan Art." Mrs. Strong aimed at proving that Roman art was not a mere slavish imitation of Greek, but that, based largely upon the panel sculpture of Alexandrine artists, it developed along natural and characteristic lines of its own and achieved a beauty deserving for its own sake of far more attention than it has received in recent years.

IN reference to the committee representing heads of schools which has been appointed to meet the Assistant Commissioners of Intermediate Education, the Association of Intermediate and University Teachers has passed a resolution claiming to represent the assistant secondary-school teachers of Ireland, and desiring as such to be included in the constitution of the above committee. It has also called the attention of the Intermediate Board to the generally inadequate remuneration which assistant secondary-school teachers receive and the consequent injury to education, and trusts that the Board will take steps to ensure that grants to schools will be paid under such conditions as will ensure an improvement in the salaries of assistants.

THE request to be elected on the representative committee is not likely to be granted. This committee met the Assistant Commissioners early in December, when it was requested to lay its views before them on the following subjects: The best method of marking English composition; the position of Irish in the programme; the number of subjects necessary for passing the examination; improvement in the history courses; the

encouragement of Greek and German; inter-competition between the groups; and the difficulties of the science regulations.

THE committee appointed by Trinity College to collect funds for building new science schools has issued a report stating the progress made. In 1903 Lord Iveagh promised a sum of £34,000, sufficient to meet the building expenses, conditionally upon the amount required for the annual upkeep—£78,000—being obtained by public subscription. Of this sum nearly £16,000 has now been subscribed, and the committee has decided to commence building a new physical laboratory in the college park on plans prepared by Mr. W. C. Marshall, the designer of the new botanical laboratories in Cambridge. The committee is now anxious to meet the next most urgent outstanding need of the university by building a new laboratory for the school of botany. It points out that the Board of Trinity College has authorised a new Chair of Agriculture, which will be useless without the laboratory, and urges its importance in connection with medical science. The school of zoology, too, is badly in need of both class-rooms and endowment, and Lord Iveagh's offer expires in May, 1906.

THE opening of Trinity College to women was signalled during the Michaelmas term by Miss Olive Purser obtaining in open competition the third place in the examination for junior and school exhibitions. There are now about twenty women students. In connection with the *ad eundem* degrees for women who have passed examinations at Oxford or Cambridge which would have entitled them, if men, to obtain degrees there, the Clothworkers' Company has offered an honorarium of £10 to each of its women scholars past and present to enable them to defray the cost of taking the Trinity College degree. The Clothworkers' Company have given scholarships to women at Oxford and Cambridge for over twenty years. The offer of *ad eundem* degrees at Trinity to such women will not remain open after 1907.

THE Department of Agriculture and Technical Instruction has published a new explanatory circular and regulations for the current year in connection with the programme of experimental science, drawing, and domestic economy for day secondary schools. This circular supersedes those previously issued. It contains a very useful official calendar for 1905, an explanatory circular by Mr. Gill, the secretary, to managers or principals, regulations for the administration and distribution of grants, and conditions of award of the secondary-school certificate in science or drawing. While very useful, this circular is by no means complete in itself, as it makes references to other circulars and regulations, and it is to be hoped that the Department may next year see its way to issuing its regulations and programme for 1905-6 complete in a single pamphlet, along with the Intermediate rules and programme.

WELSH.

AS is well known, Carmarthen has been one of the doubtful spots in Wales for Mr. Lloyd-George's Cardiff policy. With his accustomed determination, Mr. Lloyd-George has gone with the intrepidity of a conqueror to invade the constituency of Mr. Lloyd Morgan. He has told the Carmarthen people: "You have no notion of the harm done by a discordant note in a struggle like ours." Mr. Lloyd-George's position is, that to put the Church schools on a thoroughly sound educational basis would, on the average, increase rates threepence in the pound, or in the gross £100,000. This would be raising £100,000 "to endow and strengthen schools whose management and whose tests for the appointment of teachers is a wrong and a humiliation of the deepest dye inflicted upon the majority of the people

of this country. That money we have saved." A protest was made by the chairman of the Carmarthenshire Education Committee, but his interposition only led to confusion, and eventually a resolution pledging the meeting to support the Cardiff policy was carried with enthusiasm. Mr. Lloyd-George has thus swept down on Mr. Lloyd Morgan's constituency and carried his resolution triumphantly. It remains to be seen whether this forceful eloquence will convert Mr. Lloyd Morgan and the chairman of the Carmarthenshire County Council.

AN interesting experiment is being made by the Denbighshire Education Committee. A plot of land, about an acre in size, close to the Council Primary Schools, bequeathed to the old School Board by the late Mr. Thomas, of Chirk, has been made over for the purposes of cottage gardening for the pupils of the schools. Eighteen of the pupils were chosen to turn the first sod, on their own plots, at the opening ceremony. The chairman said: "It is by learning to use the hands properly, by paying due attention to the technical as well as to the mental side of education, that the most enduring results are to be obtained." His Majesty's Inspector for the district, Mr. L. J. Roberts, wrote to say that at Prestatyn a similar enterprise had proved both educational and practical, and had been received with enthusiasm. The Earl of Onslow, President of the Board of Agriculture, wrote expressing gratification at hearing of the new departure. One of the speakers pointed out that in the history of the world the arts of agriculture came first, and thought it remarkable that it was only in the twentieth century education authorities were beginning to realise that the spade, and the knowledge how to use it, was as important as how to use a ruler or a pen.

AT the half-yearly meeting of the Central Welsh Board, the following important resolution was on the agenda: "That in the opinion of this Board the predominant position given to examinations in the educational system is detrimental to the best interests of education, and that steps be taken, in particular by a conference with the University authorities, to ascertain whether some modification of the present system could not be with advantage introduced." Principal Reichal, a member of the Mosely Commission, who had given notice of the resolution, was unable to be present, and asked that the discussion might be postponed till the next meeting of the Board.

FLINTSHIRE Education Committee has been considering the suggestion of the Bishop of St. Asaph to include the Apostles' Creed in the religious teaching of the Council's schools. He held that in that county and in Wales the people were in favour of religious instruction in their schools, and this would meet with the approval of the great body of moderate opinion of the country. The question of the inclusion, or otherwise, of the Apostles' Creed was referred back to a sub-committee, and they were further asked to consider the question of including hymns.

AT the annual collegiate meeting of the Court of the University of Wales this year, held at Aberystwyth, the important question of the "affiliation" of other institutions than constituent colleges was discussed. The following resolution was passed: "Subject to such terms and conditions as may be from time to time prescribed by statute, the Court may by statute declare to be a college affiliated to the University, in respect of any faculty or faculties in which the Court is empowered to admit to degrees by the first section of art. 14 of the Charter, any public educational institution in Wales which gives adequate instruction of a university character in such faculty or faculties, including at least one branch of technical or applied science and the subjects cognate thereto." It was further resolved: "That

the Court does not consider it desirable at present to take powers by the Charter which extend beyond the requirements which are connected with the promotion of applied or technical science." The whole discussion has arisen in connection with the application of the Swansea Technical College for affiliation.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

J. Sandeau, Mademoiselle de la Seiglière. Edited by A. Dupuis. ix. + 203 pp. (Clarendon Press.) 2s. 6d.—This is one of the first eight volumes in the Oxford Modern French Series, edited by Mr. Léon Delbos. Sandeau's novel is well known, and makes a good reading-book for fairly advanced pupils. A short introduction gives the chief facts in the author's uneventful life; the text is well printed; and the notes deal mainly with points of historical and literary interest, grammar occupying a modest place. The explanation that Elizabeth was Queen of England (p. 190) seems hardly necessary; the connection of Thule and *τέλος* (p. 192) is too doubtful to deserve mention; *labour* (p. 193) should be *labeur*, and *Roderigue* (p. 198) should be *Rodrigue*.

Labiche et Jolly, Le Baron de Fourchevif. Edited by A. H. Smith. 37 + iii. pp. (Black.) 6d.—This amusing play lends itself well to cursory reading, or to acting. A few notes in French are added at the foot of the page, and some difficulties of translation are explained in three pages of English notes at the end. The text is clearly printed; the only mistake noted was the absence of the *g* in *agréable* in scene ix., l. 19.

Mrs. J. G. Frazer, Petites Comédies. Edited by F. B. Kirkman. 39 + xvi. pp. (Black.) 9d.—Mrs. Frazer is doing very useful work in placing her dramatic gifts and her facility in writing French at the disposal of our boys and girls. Her little plays, which partake more of farce than of comedy, are sure of popularity, and will help to give variety and interest to the teaching of French. The present volume contains *Charbonnier est maître chez lui*, and *Le Potichoman*, which will serve to amuse grown-up readers no less than those for whom they are primarily intended; *Bébé au piano* seems to us less happy, and not well suited for school reading. Some English notes give renderings of difficult words and phrases. There is a vocabulary, which is not quite complete. The proof has been well read; but an awkward semicolon has crept into line 9 on p. 7.

The Matriculation French Reader. Edited by J. A. Perret. xv. + 293 pp. (Clive.) 2s. 6d.—We can recommend this reader without reserve. It comprises a very short note on French prosody, sixty-six passages in prose and sixty-nine in verse, pithy and correct notes, and a good vocabulary. The prose extracts are taken from standard works published not earlier than 1830; in verse Mr. Perret has gone further afield. The book is carefully printed; the only slip we noticed being on the first page (*nasailarde* for *nasillarde*).

A. Dumas, Jacomo. Edited by F. W. Walton. 52 pp. (Nutt.) 6d.—Mr. Payen-Payne, author of that excellent handbook "French Idioms and Proverbs," is editing a series of short French Readers which promises well, judging from this volume and several others which will be noticed in due course. *Jacomo* is the exciting tale of a brigand, eminently suitable for cursory reading in a boys' school. The notes are quite satisfactory.

The old-fashioned spelling in *ardens, haletans, confians*, should not be retained; and *e* of *presque* should not be elided before *ausiit* (p. 27).

Deux Contes d'Andersen. Edited by W. G. Hartog. 66 + xii. pp. (Rivingtons.) 9d.—It will be an ill day when Andersen ceases to exert his charm; and his poetry being fundamental rather than due to any skilful handling of language, his exquisite fairy tales suffer surprisingly little by translation. Mr. Hartog has chosen "The Little Mermaid" and "The Emperor's new clothes," in a French version, the authorship of which is not stated, but which reads fluently. The notes deal with difficulties of translation and grammar; there are also an incomplete vocabulary, a list of irregular verbs, and a note on personal and relative pronouns.

Classics.

Vergili Maronis Aeneidos. Liber VII. Edited by L. D. Wainwright. viii. + 144 + xlvii. pp. With Vocabulary. (Bell's Illustrated Latin Series).—This book shows the characteristics of the series to which it belongs, and is open to the usual criticisms. While commending the remarks on Vergil's poetic talent, we feel that the editor has missed an opportunity in the section on translations. He gives specimens from Dryden, Pitt (why Pitt?), and Conington, highly praising the last, although its metre, essentially mean, is unsuitable for any work of dignity; but he gives no specimen of the interesting old version by Phaer and Twyne, or that of Gawin Douglas, which is in some respects the best of them all. Notes like "*e pastu*, from feeding;" "*argento*, ablative of material." are not wanted, but there are many of them; *feruntur*, "charge," is not middle, but passive (673).

Bell's Concise Latin Course. Marchant and Spencer. viii. + 198 pp. (Bell.) 2s.—In this volume the three parts of the larger work are compressed by the curtailing of the exercises; it contains in addition the simpler kinds of subordinate sentence. We have nothing to add to our notice of the larger work. This is meant for older learners, or for those who have less time to spare, and it appears to be fairly well suited for its purpose.

Horace. Vol. I. The Odes, Carmen Saeculare, and Epodes. With a Commentary. By Dr. E. C. Wickham. Introduction and text not paged. Notes 324 pp. (Clarendon Press.) 6s.—We lately reviewed Dr. Wickham's second volume, containing the "Satires" and "Epistles." That was a good book, but this book is a better. The volume is practically a reprint of the larger edition, with the omission of some notes on textual points, and the addition of a few new ones. Dr. Wickham's exposition of the "Odes" is too well known and too highly valued to need any further remark of ours. A long acquaintance with it has confirmed our first impression, that there is no other commentary on Horace so sympathetic or so tasteful.

The Satires, Epistles, and Ars Poetica of Horace. The Latin text with Conington's Translation. (Bell's Pocket-book Classics.) 2s. net.—The text of this edition is Dr. Gow's, reprinted from the new *Corpus Poetarum Latinarum*; the translation by Conington is already well known. Here are two good things together. There is a certain amount of padding in the translation, as is inevitable when the metre used is the rimed couplet; but it has admirable points, and the English reader will be enabled by it to enjoy his Horace almost as much as if he knew Latin. All lovers of Horace should get this book. The get-up is worthy of the subject; it is clearly printed on thin paper, and daintily bound in limp leather, a delightful companion for the traveller, small enough for a cyclist's pocket,

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not too heavy for the pedestrian's knapsack, full of a charm which will outlive all the literature on a railway bookstall.

English.

Poems and Sonnets from Wordsworth. By H. B. Cotterill. xli. + 84 pp. (Macmillan.) 2s.—Another of Mr. Cotterill's admirable and scholarly editions added to a famous series. About thirty of Wordsworth's shorter poems are here collected in conformity with the requirements of the Irish Intermediate Education Board, and Russell Lowell's essay on Wordsworth is prefixed, having been also set by the same examining body. There is thus no editorial introduction, but the notes are of just the kind to which this editor has accustomed us in his numerous previous volumes. An appendix on the Sonnet as a literary form is condensed into one page. It might conceivably have been amplified, as every student of poetry knows, but perhaps exigencies of space demanded this extreme conciseness. The whole volume is beyond praise.

Shakespeare. By Alfred Ewen. 128 pp. (Bell.) 1s.—This dainty little volume forms one of the "miniature" series now associated with this publishing house; and, restricted as it is to less than one hundred and thirty pages to cover a subject which has been expanded into a mighty library numbering thousands of volumes, it must be conceded that it has been well done. There is nothing new or original in Mr. Ewen's pages, but what he has set down is extremely readable and satisfactorily correct. He deals well with Shakespeare's life, and in discussing his plays gives something like an acting history in the case of each, which is of great interest. In examining the art of Shakespeare he is obviously trying to pour an ocean into a teacup, and the subject beats him; but what he says is worth reading if only for the purpose of recalling what one has read somewhere else, or of finding paths to tread in if we are anxious to learn the bearings of the subject. The author may be said to have acted commendably on his own dictum, that "the first duty of criticism is to praise properly," and the only blemishes we need point out are an occasional lapse into shocking journalese, as in the case of the word *visualise* on p. 18, and a sentence "to voice in the first person" on p. 28.

Carlyle's Essay on Burns. 128 pp. (Blackie.) 1s.—This is an anonymous piece of work, and is a small book treating a great subject in a rather small way. The writer of the introductory section has a pleasant style certainly; and when he assumes the pose of the critic of Carlyle's genius he is by no means unworthy of attention in an educational edition. But what does he mean by saying that "the test of success would exalt to the level of heroes such characters as Nimrod, Sulla, Louis XIV. or Henry VIII., as, indeed, the last *most strongly is*, in the eyes of Mr. Froude?" By some odd arrangement, also, the notes, which are scanty and rather poor, require the deduction of fifty before they can be recognised. Thus the second on Butler is numbered 85, and is found to refer to page 35; and one numbered 132 refers to page 82, and so on. Moreover, this last is full of error. It was Leibnitz who developed the theory of "a pre-established harmony." It was Malebranche who said that "he could see all things in God." We cannot, therefore, praise this edition unreservedly.

Scott's Ivanhoe. By G. L. Turnbull. xxviii. + 539 pp. (Dent.) 2s.—Bulky as this volume is, the editorial portions of it are not unduly spun out. Scott's novel is itself fairly voluminous, and the present editor has done his work upon it with evident respect for the powers of juvenile minds to assimilate matters upon such topics as it suggests; but he has succeeded in making an edition which has as much artistic

beauty as literary merit. There is, of course, the usual life of Scott adorned with several beautiful engravings, and there is also an analysis of the novel in which the respective personages are described with a keen eye for character. The note which points out to examination candidates what are the portions which should be carefully read is of distinct educational value. When we turn to the notes proper the special features of Aldine House editions all recur. The notes themselves are brief, seldom more than a line or two of matter; but the illustrations are exquisite, and so great is the care taken with this book that this feature is even continued into the glossary, which is adorned with four of them.

Ben Jonson's Eastward Hoe and The Alchemist. By F. E. Schelling. xxxii. + 408 pp. (Heath.) 3s.—There are many points of interest in this excellent edition, which commends the beautiful exterior of this "Belle Lettres" series still more emphatically. The life of Jonson is shortly set forth, but the introduction proper is a capital piece of literary criticism. Between the two plays occur some remarkable letters written by George Chapman and by Jonson himself to sundry highly placed persons at court (and also to King James I.), which were unearthed by Mr. Bertram Dobell three years ago. The notes are numerous, short, and to the point, and there is a good glossary. The bibliography appended to the volume is excellent. Not only does it contain notes of editions of the plays from 1605 to 1894, but there is a complete list of biographical and critical works dealing with the plays, and with Jonson, Chapman and Marston as playwrights. To mention these positive features is to say the least possible about a valuable edition.

Science and Technology.

An Introduction to the Theory of Optics. By Arthur Schuster. 340 pp. (Arnold.) 15s. net.—In this theoretical treatise the study of optics is introduced by a careful treatment of wave propagation through media of which the elastic properties are known. The mathematical treatment has been kept as simple as this branch of physics will permit. The author has, in those parts where no novel methods arise, restricted the text to a short summary with references to the available sources of information. An interesting feature is the insertion, at the end of several of the chapters, of short biographical notices of deceased authors who have made important contributions to the science. The volume is a piece of work which is worthy of its distinguished author.

Elements of the Mathematical Theory of Electricity and Magnetism. By J. J. Thomson. Third Edition. 544 pp. (Cambridge University Press.) 10s.—The chief alteration introduced into the third edition of this important text-book is the insertion of a new chapter on the properties of moving electrified bodies. This addition increases considerably the usefulness of a most valuable book.

Higher Text-book of Magnetism and Electricity. By R. W. Stewart. 672 pp. (Clive.) 6s. 6d.—This volume is based upon the author's "Text-book of Magnetism and Electricity," which has been here largely rewritten, and to which much new matter has been added. It is intended for the use of students preparing for final degree examinations. The mathematics is of an elementary nature—nothing beyond the elements of the calculus being required; but the student is evidently expected to possess previous acquaintance with mechanical principles and with their mathematical expression. The concluding chapter (on "Practical Applications") includes sections on telegraphy, telephony, dynamos, measuring instruments, and electro-plating. It would be well if, in a subsequent edition, paragraphs on the measurement of temperature by means of the thermo-couple and

of the platinum thermometer, on the radio-micrometer, and on the electric furnace, were added. We should also prefer to see more than a passing reference to the modern *electron* theory. The volume is well illustrated, and contains a limited number of numerical examples.

A Further Course of Practical Science. By J. H. Leclard and W. H. Salmon. 224 pp. (Murray.) 2s.—This volume is a continuation of Mr. Leonard's "First Course of Practical Science," and includes an elementary treatment of mechanics, hydrostatics, and heat. A praiseworthy endeavour is here made to render the practical treatment of elementary mechanics attractive to young students, and it would be an interesting experiment to find whether the unusually long chapter on *forces in equilibrium* would be a success in the school laboratory. The volume is a very thorough piece of work, and the complete series of text-books written by Mr. Leonard is well adapted for students who are taking mechanics and science in the junior and preliminary examinations of Oxford and Cambridge.

Messrs. A. Gallenkamp & Co., Ltd. (Sun Street, Finsbury Square, E.C.), have submitted for our inspection a price-list of various types of the "Kryptol" heating apparatus, manufactured by the Kryptol-Gesellschaft, Ltd., Berlin. Kryptol is a granular-resistance material, consisting of a mixture of graphite, carborundum, and silicates. When traversed by an electric current, it is capable of producing any desired temperature up to 2,000° C. The method of application consists in transmitting a current, by means of carbon electrodes, through a layer of the material spread over an insulating plate; the heat can be localised by varying the thickness of the layer. The method may be applied to various processes, e.g., to furnaces and distilling apparatus in the laboratory, to cooking-stoves, and to the heating of buildings. Voltages as high as 250 may be used.

Messrs. F. E. Becker & Co. (W. and J. George, Ltd., successors) have recently issued a book of *gummed labels* for the reagent bottles, shelves, &c., of a chemical laboratory. The book, which has been compiled by Prof. G. E. Cory, of Grahamstown, South Africa, contains several novel and useful ideas.

Mathematics.

An Elementary Treatise on Graphs. By Prof. George A. Gibson. x. + 183 pp. (Macmillan.) 3s. 6d.—This is, as was to be expected from the pen of Prof. Gibson, more than the usual fragmentary collection of examples on graphs; it is a careful introduction, by means of graphs of various functions, to the subject of plane analytical geometry. The theory of equations is also touched on, and the question of maximum and minimum values of functions. The book is excellent, and in most places easy to follow, though some parts would be found difficult by a beginner. We notice one curious slip, on p. 44, where it is stated that "a straight-line graph implies that, as one quantity changes, the other quantity changes at 'a constant rate.'" Surely the second quantity changes "proportionally," and therefore only at a constant rate if the first also changes at a constant rate. Such slips are, however, rare. There is a good collection of well-varied examples, with answers, and a collection of useful tables. The book would not supersede more systematic treatises on analytical geometry, theory of equations, and differential calculus, but might well be studied concurrently, or somewhat in advance of the more systematic work.

Examples in Algebra. By W. M. Baker and A. A. Bourne. xi. + 222 + lxxvi. pp. (Bell.) 3s. Also in two parts. Part I., 1s. 6d.; Part II., 2s.—This collection of examples will meet the needs of teachers who prefer that their pupils should have no text-book or sets of worked-out examples. Part I. and

the contents of pp. 1-133 of the complete collection comprise all the examples in Part I. of the "Elementary Algebra" of the same authors (see THE SCHOOL WORLD, VI., 359), all the examples being included and their numbering corresponding with that in the text-book. Part II. and the remainder of the complete collection are taken in the same way from Part II. of the Algebra, of which we have just received a copy. The examples are simple, numerous, and varied; it would, we think, be a decided improvement if more of the equations had irrational roots, especially in the case of simultaneous quadratic equations. For some reason that is not at first sight apparent, the text of chapter xxxii. of the Algebra has been reprinted among the examples.

Solutions of the Problems and Theorems in Charles Smith's Geometrical Conics. By Charles Smith. i. + 143 pp. (Macmillan.) 6s.—Teachers who are not constantly occupied with geometrical conics usually find the solution of riders in that subject to be fairly difficult, and, when hard pressed, will no doubt welcome a book that offers them some relief. The solutions given in this collection are clear and compact, and should prove useful; so far as we have been able to test them, the proofs are sound and not too artificial. Occasionally symbols occur, such as PN^2 , $P'N^2$, that are hardly geometrical in the Euclidean acceptance of geometry, and that are not to be found in the conics of Apollonius; but we suppose they must be allowed, though they are far from elegant, and could in most cases be avoided by a slight alteration of the proof.

Key to Elementary Geometry. By Cecil Hawkins. 196 pp. (Blackie.) 5s. net.—For those who find any difficulty in the solution of the exercises in the "Elementary Geometry" by the same author this key should enable them to set their minds at rest. Amid the diversity of methods in the present age of change there may be some advantage in seeing how an author carries out his system, but it is to be hoped that the time during which a key will be in any sense a necessity will be brief. Teachers ought to develop their own methods and to act on their own initiative, though unfortunately there are too many who regret the freedom that has been granted to them.

Grammar School Algebra. By David Eugene Smith. vi. + 154 pp. (Ginn.) 2s. 6d.—The title will hardly suggest to readers in this country the scope of this little book, which is of a very elementary character. Algebra is throughout treated in close connection with arithmetic, and is introduced by a large number of examples in which some rule of arithmetic or mensuration is expressed by means of a formula; much of the book will properly be taken up in the lessons on arithmetic. The treatment is very simple, and contains many suggestions for young teachers. The book includes fractions and easy quadratic equations. The exercises are numerous, but no answers are given.

A New Geometry for Senior Forms. By S. Barnard and J. M. Child. xv. + 333 pp. (Macmillan.) 3s. 6d.—This volume, together with the "Geometry for Junior Forms," contains the whole of the book published under the title, "A New Geometry for Schools," but the volume before us includes in addition a course of elementary solid geometry. The sterling merits of the "New Geometry" were recognised on its appearance (THE SCHOOL WORLD, V., 393); the additional matter in the new volume has been judiciously selected, and contains all the essentials of solid geometry so far as that is required for elementary students. The standard results in the mensuration of the elementary solids are established, though opinions as to the rigour of the proofs will probably differ. It is in any case a good feature of the recent changes that more attention is being paid to solid geometry. The authors adopt the spelling "paral-

leloiped"; it is strange to find the persistence of this form, which is totally at variance with the Greek word.

Brooks' Flexible Curve. (London: W. J. Brooks.) 1s. 6d.—The curve before us is that described as "Pattern A," and is of celluloid, eight inches long; it is provided with tabs at intervals along its whole length, and can be held in position by placing the fingers of one hand on the tabs, while the pencil is used with the other. As a rule, we have not found flexible curves to be so satisfactory as we should like, but we are glad to say that this one seems likely to meet the needs of ordinary graphical work; at any rate, repeated trials with the instrument have given very good results.

Miscellaneous.

Who's Who, 1905. 7s. 6d. net. *The Englishwoman's Year-Book, 1905.* 2s. 6d. net. *Who's Who Year-Book, 1905.* 1s. net. (Black.)—The new issues of these three convenient annuals are as useful as ever. "Who's Who" continues to grow in size; it has put on nearly a hundred pages this year, bringing the total up to 1,796. Our readers will turn with most interest, perhaps, to the biographies—or ought we not to say, autobiographies—of the eminent schoolmasters and schoolmistresses contained in the volume, and such references will show that the editor has given due prominence to the work of practical teachers. "The Englishwoman's Year-Book" contains all the information that women engaged in remunerative and useful work generally are likely to require. "Who's Who Year-Book" contains in its 128 pp. a maximum of valuable data; it is in fact made up of the tables which formed originally the nucleus of "Who's Who."

Notes on German Schools, with Special Relation to Curriculum and Methods of Teaching. By William H. Winch. vii. + 264 pp. (Longmans.) 6s.—In the first part of his book, which runs to 66 pages, Mr. Winch covers much the same ground as previous writers have done whose works have been reviewed in these columns. He gives us a brief, readable account of the primary, middle, and that section of German secondary schools in which modern languages and science take a prominent part. Mr. Winch is of the same opinion as many other educational investigators, that oral teaching is overdone by German teachers, and that too few attempts are made to develop initiative in the pupils. Mr. Winch praises with discretion, and during his visit of a "month or two" he noted many defects in German methods, and has reported them in his chapters. Of the value of the second part of the book we are a little sceptical. It consists of brief notes made by Mr. Winch when visiting typical classes in schools of different grades. The deductions drawn from a single lesson received by a class in a particular subject will not always give a just estimate of the teacher's ability to teach, nor of the intelligence of the class, for the disturbing factors are too numerous. If this is true sometimes where the inspector is of the same nationality as teacher and taught, it is likely to be the case much more frequently when the visitor is a foreigner, anxious to obtain a maximum of material in a minimum of time. But though we should hesitate to draw conclusions from notes made in these circumstances, we admit gladly that the reader can gather many useful practical hints from Mr. Winch's notes.

Elementary Schools. (Handbooks for the Clergy.) By the Rev. W. Foxley Norris. ix. + 176 pp. (Longmans.) 2s. 6d. net.—The case for denominational public elementary schools as it appears to a broad-minded churchman is presented here with clearness and generally with laudable fairness. It may be doubted whether the author always exactly appreciates the non-conformist position—as, for example, on p. 96—when he writes, "Most Nonconformists, who care at all about the religious teaching of their children, are glad and not sorry that they

should learn the Church Catechism." Bearing in mind Mr. Norris's beliefs that voluntary schools represent "the best form of national education" (p. 62), and that "Education Committees are by no means necessarily to be trusted" (p. 13), the reader will be able to obtain a good account of elementary education in this country and of the aspirations of the Church with regard to it.

A Teacher's Handbook of Moral Lessons. Arranged by A. J. Waldegrave. 154 pp. (Swan Sonnenschein.) 1s. 6d.—This small book is issued by the "Moral Instruction League," and it has in its first page a long quotation from the excellent introduction to the Education Code of 1904. Habits, Manners, Patriotism, Justice, Truthfulness, Zeal, Work and Thrift are the subjects dealt with. So long as such lessons deal with the common sanctions of daily life, they cannot but be good; but when the intelligent child asks the question (*if we allow intelligent children to ask questions*), "Why should I be good?" the "Moral Instruction League" apparently attempts to give no answer. One is glad to see this: "Nature is very wasteful." The teacher will find fallacies in the book, but these may be avoided. It would be well if sets of practical exercises could be added—e.g., in the teaching of physical courage.

Some Successful Americans. By Sherman Williams. 194 pp. (Ginn.) 2s. 6d.—This might be made a very inspiring reader. Some of the Americans are Abraham Lincoln, Horace Greeley, and Louisa M. Alcott. It would surely have been better if the word "great" had been used on the title-page. The book is admirably illustrated.

Organised Games. By Frank Elston. 74 pp. (Leeds: E. J. Arnold.) 3s.—This book, the first perhaps which is the direct outcome of the Board of Education's suggestion, understands the words "organised games" to mean "drill made interesting." A large number of controlled games are placed at the disposal of the teacher, and, properly carried out, these should prove useful. But nothing will make up for the national need of playgrounds, which, in the opinion of the last generation, were not required at all. There is a great deal of new and fascinating information in the book.

The York Primers, Nos. 1 and 2 (Bell), are well-printed and well-illustrated infants' books.

The Exercises in Pitman's *Lessons in English* (4d.), noticed in a previous issue, are harder than they seem, and encourage thought.

Hints to Reciters. By the late Clifford Harrison, with introduction by Herbert Hardinge. 92 pp. (Swan Sonnenschein.) 1s. 6d.—This dainty volume will be bought eagerly by Mr. Harrison's admirers—and they are legion. The "Hints" are few but good; the list of possible pieces at the close of the volume is interesting and very useful, and the volume is worth putting on our shelves, if only for the pathetic farewell speech. The gifted reciter stood alone, and it is impossible for him or anyone to convey his art to others; but his life-story ought to live when his music and his voice are forgotten.

The Works of Shakespeare. (Heinemann.) Each volume 6d. net.—Mr. Heinemann continues to add to his delightful yet wonderfully cheap edition of Shakespeare's plays. We have received, in addition to those mentioned in previous issues of THE SCHOOL WORLD, *Merry Wives of Windsor*, *Timon of Athens*, *The Winter's Tale*, *King Richard II.*, *King Henry IV.*, Parts I. and II., *King John*, *Antony and Cleopatra*, *King Henry VIII.*, *Two Gentlemen of Verona*, *Measure for Measure*, *Comedy of Errors*, *Midsummer Night's Dream*, *Lucrece*, *Venus and Adonis*, and the *Sonnets*. The excellence of the series is well maintained, and we have little doubt that it will meet with the success it undoubtedly deserves.

CORRESPONDENCE.

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

English Language and Literature.

IN common, doubtless, with many others, I was much pleased with Mr. Fowler's first paper on the subject of English literature as a means of education. Especially welcome were his protests against methods by which young people are "alienated from what they should be stimulated to love."

It was with considerable expectations that I looked forward to a second article from his pen, which I heard was to appear in your November number. I thought it likely that he would sketch for us in its main outlines some edifice that might be erected on the principles laid down by him with so much wisdom. I hoped to hear not only of some plan by which such things as "Analysis, Parsing, Paraphrase, Précis," &c., might be relegated to their proper place, and cease to disgust boys and girls with what they are naturally inclined to love, but also of methods by which this natural bent might be encouraged and developed. I wondered whether his own experience in early years made him recall with intense gratitude, as I myself recall, the inspiring influence of a teacher (in my case it was dear old George Long, one of England's greatest scholars) full of love and enthusiasm for what is great and beautiful in literature and art. And I wondered whether he would have anything to say as to the great dangers attending any attempt to use what is great and beautiful in literature as material for examination—and how such dangers may be best avoided. The question of impressing a large amount of first-rate literature on the memory—a thing of inestimable value in most cases, though sometimes impracticable—was another point on which I wished to have Mr. Fowler's opinion more fully stated. And, lastly, I was anxious to hear whether his ideas to any extent coincided with mine on the subject of encouraging in schools (with the greatest tact, and the avoidance of all obtrusive patronage) such things as reading societies, literary clubs, Shakespeare clubs, weekly or monthly readings, &c., to which, far more than to any lessons or examinations, many have owed much of their enthusiasm for the literature of their own country.

My chief object in writing this letter is to ask whether Mr. Fowler, or some other competent person engaged in the work of teaching, would give us his ideas as to the practical application of the principle that the only knowledge of literature (and perhaps of everything else) that is of any real educational value is that knowledge which is one with love.

Mr. Fowler's "Suggestions for Courses" were interesting in their way, but proved a great disappointment for me. By the bye, would everybody consider "Romola" a suitable book for boys and girls of fifteen? And might not some persons feel a little doubtful as to the wisdom of advising "Hypatia" and the "Vicar?" For divers reasons both seem to me books better reserved for later perusal, and inappropriate for school purposes.

Lastly, I for one would be very unwilling to stuff the minds of boys and girls of fifteen with what Plato calls the rotten fodder of opinion by making them read the critical biographies advised by Mr. Fowler. Such books as "English Men of Letters" doubtless have their use; but I think it would be a most unwise act to put such books into the hands of young people, and thus encourage them to assume the attitude of the critical pedant while still, perhaps, almost wholly ignorant of the works of the men of letters in question. As for More's "Utopia," might I ask whether Mr. Fowler means some

modernised version of the orthographically ridiculous translation by Robinson of the Latin original?

Château-d'Oex,

H. B. COTTERILL.

November 19th, 1904.

I AM grateful to Mr. Cotterill for his interesting and courteous letter. There is little agreement yet among schoolmasters as to the best use of English literature as a school subject, and much may, at this stage, be gained by full and frank discussion.

But is he not just a little unreasonable in censuring me for not having done what I was not asked, and never attempted, to do? If he will look again at the title of my paper in the October number, he will see that it merely professed to be a commentary on some new regulations of the Board of Education. I had no intention of writing further just then, or building an edifice upon so slender a foundation. But I was asked to supplement the Board's "specimen" courses by some further suggestions, and I complied with the request. No two persons would agree about such lists—just as no two persons were found to agree about "the best hundred books"—and I am not surprised that Mr. Cotterill does not wholly approve my selection. I will take his criticism of these lists first, before I pass to other points in his letter.

First, as to the inexpediency of recommending "Romola," "Hypatia," or the "Vicar" for school reading. As the knowledge of the evil in human life cannot be excluded from our schools, it does not seem to me wise to exclude all literature that makes reference to it. Is it not better that books which treat of such things in a perfectly wholesome way should sometimes be put in the hands of young people than that we should always ignore this side of life? We can hardly keep out of their way novels and newspapers in which such things are treated in a far less desirable fashion. (2) The temper of the best volumes in the "English Men of Letters" series is such that they are very unlikely to turn a boy or girl into a "critical pedant." Such a result is more likely to be produced by the reading of Macaulay. But the effect is only temporary, and a boy learns so much from Macaulay that we may put up with the drawback for the sake of the compensating advantages. Of course, no volume of "English Men of Letters" should be put into the hands of a class who are not reading the author dealt with. But the best volumes in that series are entitled to be considered, like Johnson's "Lives of the Poets," a part of English literature, not guide-books to it. (3) I *did* mean a modernised version of R. Robinson's translation of "Utopia." There are such versions, but in the interval between the publication of my list and the receipt of Mr. Cotterill's letter I had discovered, or thought I discovered, that they were not satisfactory, and I had been considering whether—out of love for Plato as well as for More—I should attempt to supply the deficiency.

I pass to the larger questions, which are so large that I hardly know how to touch them in a letter. I do not think that even "Parsing, Paraphrase and Précis" need disgust, if such things are not allowed to monopolise the literature hour. I entirely agree with Mr. Cotterill in setting supreme value upon "the inspiring influence of the teacher." That is the one inestimable element which no striving after improved methods and no system of training can secure. As to examinations, I hold that their influence on the teaching of English literature has been peculiarly bad, but that it is possible to set papers even in this subject which will encourage good teaching and discourage cramming. There is much reason in the present outcry against examinations. Only let us be careful that we do not, if we substitute inspection, encourage a showy and less thorough form of teaching; and let us remember that, if literary teaching is to be of much educational value, it must have nothing slipshod and inaccurate about it. My experience of school literary

societies is that they may be very valuable for a small number of boys, but that we cannot rely upon them for reaching a very large number. Is not Mr. Cotterill's experience rather of days when the literary training in schools was mainly classical, and the literary society supplemented this by encouraging the study of English literature among classical boys? We have to do with an altered condition of things. I have no sort of right to speak with that authority which successful experience alone can give, but I want to see the attempt made to get out of English literature the mental training which has hitherto been got almost exclusively out of the classics. Why should not the Elizabethan writers, as well as the Augustan, "pass into the blood," in Stevenson's exquisite phrase, "and become native in the memory"?

J. H. FOWLER.

Chemistry of Daily Life.

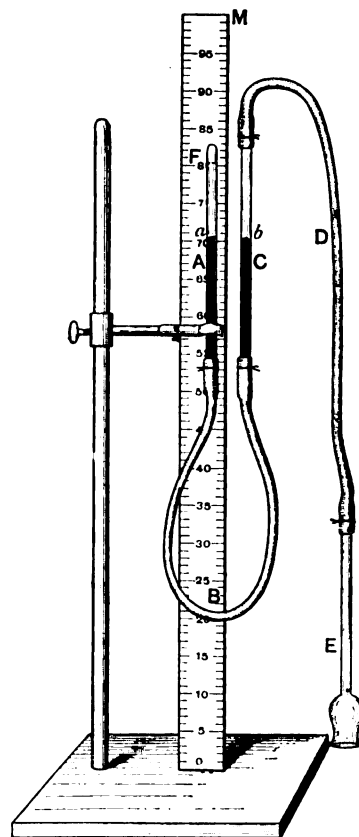
I HAVE read with great interest the article in THE SCHOOL WORLD of November last on the "Chemistry of Daily Life, II.: an Elementary Course of Work." In it your contributor describes an apparatus for the demonstration of Gay Lussac's Law. Will you permit me to point out that this apparatus is wrong in principle?

A glance at the diagram will suffice to show that the first application of heat to the flask will cause some air to escape into the Winchester Quart, and that this portion will, in consequence of this escape, never get further heated.

Again, the writer makes the remarkable statement that Boyle's Law is not suitable for demonstration by young students. For years my students (aged about 14) have proved this law, using a simple apparatus which gives results at least as good as those obtained by Boyle himself.

A and C (Figure) are pieces of ordinary quill-glass tubing. B and D are $\frac{1}{8}$ inch red india-rubber tubing. E is a thistle funnel. All joints are wired. Before connecting A and B the drawn-out end F must be calibrated. A small quantity of mercury is admitted. A small gummed label or scratch with a file is used to mark where the mercury stands. A small cork is placed in the open end and the tube inverted. The length of this mercury column is now read in the cylindrical portion of the tube, and this length is noted on the label, since it has to be taken into account later, in order that lengths of the tube may be taken as measures of the volume of contained air. A is now attached and wired to B.

Mercury is introduced through E, and by bending the



apparatus about it is not difficult to arrange that the tube A shall be half full of air when the level of the mercury in A and C are the same.

A is now fixed in a clamp with a metre scale behind, so that the height of the mercury in A (called *a*) can be read, and also that in C (called *b*) as it is raised or lowered. When further variations in pressure become impossible with the mercury in C, more can be poured in and read in the tube E.

Read as follows: height of *a* and *b* when level, height of F (stationary), heights *a* and *b* as C is raised or lowered.

Construct Table thus:—

Height of mark at F = 49.7 cm., correction for drawn-out end at F = 1.8 cm. Barometric height = 76.3 cm.

V			P			
Height <i>a</i> .	F - <i>a</i> .	F - <i>a</i> + end correction.	Height <i>b</i> .	<i>b</i> - <i>a</i> .	Barometric height + <i>b</i> - <i>a</i> .	P x V.
36 cm.	13.7	15.5	36	0	76.3	1183
37.6 "	12.1	13.9	46.3	8.7	85.0	1182
38.9 "	10.8	12.6	56.0	17.1	93.4	1177
39.6 "	10.1	11.9	63.0	23.4	99.7	1186
40.4 "	9.3	11.1	70.0	29.6	105.9	1175
41.3 "	8.4	10.2	80.0	38.7	115.0	1173
42.0 "	7.7	9.5	90.0	48.0	124.3	1181
42.8 "	6.9	8.7	100.0	57.2	133.5	1187
48.5 "	21.2	23.0	4.0	-24.5	51.8	1185
30.3 "	19.4	21.2	10.0	-20.3	56.0	1186
33.7 "	16.0	17.8	24.0	-9.7	66.6	1185
34.5 "	15.2	17.0	28.0	-6.5	69.8	1185
34.9 "	14.8	16.6	30.0	-4.4	71.4	1185
35.8 "	13.9	15.7	35.0	-0.8	75.5	1185

The above numbers were obtained, on January 29th, 1904, by a boy in the second year, age 13½, and are sufficiently good to show P x V as a constant. They were also plotted in a curve which are shown to be a part of a rectangular hyperbola.

The following results for Gay Lussac's Law were also obtained by this student.

Apparatus.—Round-bottomed flask (about 400 cc. capacity), rubber cork, through which passes a short piece of glass tube, above which is a short piece of rubber tubing supplied with a screw clip.

The flask is cleaned, dried and plunged for five minutes beneath boiling water in a large vessel, say a fish kettle, containing water kept boiling by a large Fletcher burner. The clip is screwed up while so immersed. Now the flask is inverted and plunged beneath cold water, the temperature of which is taken and the screw clip is loosened.

It is left here five minutes, and when the flask is so arranged that the level of the water which has entered, owing to the contraction of the air on cooling, is at the same level as that of the cold water outside, the clip is screwed up once more. The volume of water now in the flask is measured. It was 96.5 cc. This amount entered on cooling the flask from 100° to 9° (the temperature of the cold water).

If 96.5 cc. entered for a fall of 91°,

$$\frac{96.5 \times 100}{91} = 106.04 \text{ cc.}$$

would have entered for a fall of 100°—that is, had it been cooled to 0°. The total volume of the flask is measured, and is found to be 390.5 cc.

390.5 - 106.04 = 284.46 cc. = volume of air in flask on cooling to 0°. Expansion for 100° is therefore 106.04 cc. on 284.46 cc. For 1° the fractional expansion on the volume at 0° is:—

$$\frac{106.04}{284.46 \times 100} = 0.00372.$$

Correct result = 0.00366 or $\frac{1}{273}$.

S. H. WOOLHOUSE.

Parmiter's School, Victoria Park, N.E.

A History Map.

I THINK that "Your Reviewer" has been anything but fair and just to my "History Map" in the notice published in THE SCHOOL WORLD for November last. The map is meant to be used just like any other map or chart, geographical or historical—that is, as an aid to study. The Muse of History is not meant to live in "these arid wastes," but in the minds of teachers and pupils. For that matter, no more could the Muse of History live in the arid wastes of the printed page. But with imagination the "arid wastes" of printed page or graphic chart can be turned into a paradise. In what respect, may I ask, is a geographical map less arid than my history chart? It consists of lines and marks and printed matter. It gives the relative position of points and lines in space; the history map gives the relative position of events in time, co-ordinated as far as possible according to their degree of subordination. That such a representation of events in time in terms of space is of great help to teacher, scholar, or student who already knows what these events are, who can doubt? My claim is that the "History Map" does for History (as far as that is possible) what the geographical map does for geography. But no teacher who is intelligent enough to read THE SCHOOL WORLD would ever dream of teaching geography solely from a map. Similarly I hope no teacher would ever dream of using a history chart or map without previous study of the period represented.

GEO. C. PRINGLE.

Burgh and County High School,
Peebles.

A GEOGRAPHICAL map has at least this to differentiate it from this so-called "History Map": it stands for realities: it is, in fact, a picture of the countries which it represents, its outlines are determined by nature, and are fixed, unalterable, and inevitable.

But this "History Map" stands merely for figments of the brain: it is an example of one among countless attempts to represent graphically lapse of time, continuity, cause and effect, order of importance and other unsubstantial things. It is a map

"Which, look'd on as it is, is nought but shadows

Of what it is not."

A geographical map has to be judged by the standards of pictorial art, but this "History Map" merely by the standards applicable to educational devices.

That as an aid to the teaching of history it would be worse than useless, that it would cause bewilderment and disgust, is still the opinion of

YOUR REVIEWER.

Incorporated Association of Assistant-masters (London Branch).

WE beg the favour of a small space in your columns in which to announce that a single Branch of the Incorporated Association of Assistant-masters has been formed to include all members working in secondary schools within the County and City of London. The Branch already numbers nearly 170, such members representing all classes of secondary schools.

The aims of the new Branch are to facilitate intercourse among assistant-masters in London, and to provide a means by which their legitimate claims for improved payment and conditions of service may be laid before the educational authorities.

Mr. G. F. Bridge is chairman of the new branch, and Messrs. A. E. Bernays (City of London School) and R. F. Cholmeley (St. Paul's School) are the vice-chairmen.

G. FOWLER, }
L. GREEN, } Hon. Secs.

27, Great James Street, W.C.

The Education and Status of Women.

In discussing this subject, Mr. Cloudeley Brereton suggests that "what we really want is a committee of patriotic peeresses to start an Eton or Harrow for girls belonging to the highest classes, staffed with the flower of Oxford and Cambridge women." Mr. Brereton may be glad to hear of steps already taken in this direction. So long ago as 1877, a company was formed at St. Andrews, Scotland, with a view to providing for girls of the class from which the boys at the great public schools are drawn, a school of a similar type, with such modifications as a wise discretion might prescribe. The first headmistress, Miss L. I. Lumsden, was a student of Girton College who had been declared qualified for honours according to the standard of the Cambridge Classical Tripos, and, both at the outset and subsequently, the staff has included a considerable proportion of women who have taken honours at Cambridge and elsewhere. In 1896, Miss Lumsden's successor, Miss Dove, gave up her post at St. Andrews, and, with the help of influential friends, founded a school of the same type at Wycombe Abbey, Bucks. In these schools the teaching and administrative staff hold a similar position to that of the masters of the great public schools for boys, and the pupils, generally speaking, are of the same class as public-school boys.

There are two unavoidable differences between the new schools and the old. The founders of the girls' schools, having no endowments to start with, had to raise the necessary capital by forming limited liability companies, and the government rests ultimately in the hands of the shareholders. It does not appear, however, that development on what may be called public-school lines has been hindered. It is also an obvious deficiency that the comparatively youthful institutions cannot, like an Eton or a Harrow, look back upon the glories of hundreds of years. On the other hand, they afford the opportunity of bringing home to the girls their responsibility, both to the community at large and as the makers of traditions which may be cherished with affection and pride by their posterity.

EMILY DAVIES.

6, Montagu Mansions,
London, W.

THE STUDY OF PEDAGOGICS BY CORRESPONDENCE.

As was explained in an article in the December issue (p. 454), teachers who desire to join a club for the study of a standard work on education should send their names to the Editors of THE SCHOOL WORLD, who will arrange new clubs as soon as they have received a sufficient number of names. Those readers who prefer to participate in the *School World Club*, described in the article already referred to, should procure a copy of the selected book and send in their remarks on the reading of Weeks III., IV., and V. by the date given below.

The School World Club.

BOOK FOR STUDY.

Essays on Educational Reformers. By R. H. Quick. (Longmans.) 3s. 6d.

WEEKLY DIVISIONS OF THE BOOK.

Week	I. Chapters I.-III. (inclusive)	Week	VIII. Chapters XIV. and XV.
"	II. Chapters IV. and V. (inclusive)	"	IX., X., & XI. Chapter XVI.
"	III. Chapters VI.-VIII. (inclusive)	"	XII. Chapter XVII.
"	IV. & V. Chapters IX. and X. (inclusive)	"	XIII. Chapters XVIII. and XIX.
"	VI. Chapter XI.	"	XIV. Chapters XX. and XXI.
"	VII. Chapters XII. and XIII.	"	XV. Chapter XXII. and Appendix.

Comments and questions on the reading of Weeks III., IV.,

and V., to be sent to the Editors on or before January 16th, 1905.

SELECTED COMMENTS ON CHAPTERS I.-V. (INCLUSIVE).

CHAPTER I.—"We have again entered on an age of change, but we are still much influenced by the ideas of the Renaissance" (p. 4). Quick wrote this in 1880, though the greater part of the present book was published in 1868. His remark shows how slowly the educational world moves on to sanity. The absurdities attendant upon the general adoption of the ideas of the Renaissance scholars, which are exposed convincingly by Quick in Chapter I., seem, in view of the recent debates on compulsory Greek at Oxford and Cambridge, to be to-day just as dominant in their influence upon the work of the schools as when Quick wrote. It would be interesting if, instead of panegyrics upon the educational value of the homeopathic dose of Greek administered to candidates for the University Preliminary Examinations, the classicists would tackle squarely the indictments set forth by Quick in his first chapter. These are stated to be (1) the taking of the classical scholar as the only ideal of the educated man—thus exalting the learner above the doer. (2) The attributing to literature more direct power over common life than literature has ever had, or is ever likely to have. (3) The attributing to literature a share in general culture which literature seems incapable of taking. "The main if not the only object they kept in view in bringing up the young was to gain for them admission to the treasure house; and though young people could not understand the ancient writings as literature, they might at least study them as language and thus be ready to enjoy them as literature. Thus the subject of instruction in the schoolroom came to be, not the classics, but the classical languages" (p. 17.) (4) Since the study of the ancient languages is so totally different from the study of the ancient literatures, the student who never goes beyond the first stage either gets no benefit at all, or a benefit which is not of the kind intended. (5) The little importance attached to the education of young children.—A. T. SIMMONS.

CHAPTER II.—The division of the sixteenth century educationists into three parties—not clearly defined, it is true—by Quick is interesting. The Scholars who cared both for the form and substance of the ancient classics, the Verbal Realists with their sole regard for the substance of these writings, and the Stylists with their consuming reverence for form alone, are all represented even now. But have we not another party who are willing to ignore literary masterpieces—ancient or modern—if they can but come into contact with Nature and her works and understand them if only partly?—L. GILES.

CHAPTER III.—With Quick, I do not think much of John Sturm, the contemporary of our Mulcaster. He would, it seems to me, be disposed of nowadays as an educational "hustler." He valued most highly what is known as "success," and surely to choose the lower reward when the higher is possible is, to the schoolmaster, the unpardonable sin. Sturm clearly enjoyed a large income and great popularity, but as this was at the cost of giving boys of seven, as an educational diet, courses of declensions and conjugations, it is to be hoped that no modern teacher exists who can envy him for having at one time in his school 200 noblemen, 24 counts and barons, and three princes.—G. STREET.

CHAPTERS I.-V. Quick's book is memorable for its early recognition of the practical importance of an acquaintance with the successes and failures of older educators, for its wide sympathies, and its limpid style. Its limitations are due partly to an excessive dependence (at that time difficult to avoid) on German writers, especially Von Raumer; partly to a certain superficiality of view, and a consequent attempt to combine the essentially antagonistic. The latter is exemplified in the notes to p. 46, where equal approval is given to two *dicta* which would be, if practically applied, mutually destructive. His two chapters on

the "Renaissance" (as he calls it) are, perhaps, the least satisfactory of the whole book. Under this term he seems to include the Revival of Learning, the Renaissance (in its essence an æsthetic movement) and, to some slight extent, apparently even the Reformation—three different things. His difficulties arise from the fact that he does not start from the centre—Italy. His total omission of Vittorino da Feltre from his list of Renaissance educators is sufficient proof of that. He postdates the movement by a hundred years or more; and actually (on p. 3) states that Greek literature was unknown in the West of Europe till after the fall of Constantinople. He hardly seems (p. 5) to understand the words which he has quoted from Mark Pattison about "beauty of form," and there is some difficulty in disentangling the references to artistic and to literary beauty, and in reconciling p. 5, section 6, with p. 23, section 5. The truth seems to be that, although the widely-ramified movement called the Renaissance was essentially sensuous and æsthetic, yet, on its literary side, the substance of classical authors was valued as well as their form, by the men of the Renaissance: from Petrarch and Ficino to Machiavelli and Erasmus. Quick's statement that the substance was unvalued is as disputable as the ground (pp. 7-8) on which it is based, namely, that the Renaissance scholars made no attempt to popularise the substance by translations. On the contrary, this was the express purpose of Nicholas V.'s elaborate series of translations from Greek into Latin.

P. 24: As to nature study, it should be remembered that life at that time was largely passed in walled towns, which gave little scope for observation of nature.

It is doubtful whether Sturm deserved so much (though rather depreciatory) attention; he may be of importance in the history of classical learning, hardly in that of education.

P. 53 (note). Are parents, as a rule, so austere and discriminating as to motives?

When all is said and done, what do we not owe to our Quick in stimulus and interest?—Dr. H. M. BEATTY.

CHAPTER V.—Is Locke not right in considering the education of a "gentleman," using the word in its technical sense, should be different from what we should now consider it shame to call the "abhorred rascality." It always seems to me the weak point of our educational system that year by year there is a greater attempt at uniformity. Should not education fit a man for his probable life-work? And, if all are educated on the same lines, how is this possible? Cart-horses, race-horses, &c., are not developed in the same way—or, perhaps I should ask, are they? My knowledge of horses is limited. I consider uniformity in education so far to have told unfavourably on society generally, for it seems to have rendered each class more ambitious but less dignified than of yore—each class aspiring to usurp the place of that above its own social level.—L. MARION JONES.

MUTUAL AID.

THE object of these columns is to afford teachers the opportunity of asking questions of and giving assistance to colleagues. The questions received to which replies are solicited will be printed first; following these will be the answers which have been sent in, and, to make such replies intelligible to all readers, they will be accompanied by the question.

Readers are invited to send answers to any of the questions asked below by our correspondents.

The questions should deal only with educational matters, using the expression in a broad sense, and the publication or otherwise of any question must be left entirely to the discretion of the Editors.

Questions and answers should be addressed to the Editors of

THE SCHOOL WORLD, St. Martin's Street, London, W.C., and should be accompanied by the full name and address of the sender, though not necessarily for publication. Each question or answer should be on one side only of a separate sheet of paper.

QUESTIONS.

H. H. W. From whom can I obtain, in quantity, cardboard or other models of French coins, for use in class?

E. R. D. Wanted the publisher and price of any annotated edition of Addison's "Cato," or, failing this, the text published separately.

J. M. S. Can any reader kindly tell me of some book on geography which (i) explains *why* a particular trade has sprung up in a certain town or district; (ii) which goods are exported and imported at each port?

QUESTIONS WITH ANSWERS.

H. H. W. *How can I obtain the names of French pupils willing to exchange correspondence in English and French with my scholars?*

R. S. You should communicate with Miss E. A. Lawrence, 5, Norman Road, South Wimbledon.

F. L. L. *Can any reader tell me (a) what is the best wax to use for coating "home-made" lantern slides; (b) how to ensure getting a thin even coating of wax on the glass?*

L. H. You will find an article by Mr. Harold Busbridge, in THE SCHOOL WORLD, March, 1903, on the "Preparation of Lantern Slides" useful, and also a letter to the same magazine April, 1903, by Dr. W. Marshall Watts.

C. M. J. *Where can I obtain cheap five-figure mathematical tables, containing logarithms and the natural and logarithmic trigonometrical functions?*

The only five-figure tables I know contain far more than is needed for school work, and are consequently too expensive.

C. W. S. Four-figure tables are, I think you will find, most suitable for school work. Most of the recent books on algebra, trigonometry, and practical mathematics contain all the tables you ask for.

Some cheap tables are: "Mathematical Tables for Ready Reckoning," F. Castle. (Macmillan.) 2d. "Four-Figure Mathematical Tables," J. T. Bottomley. (Macmillan.) 2s. 6d.

Among five-figure tables may be recommended: "Five-Figure Tables of Mathematical Functions," by John B. Dale (Edward Arnold), 3s. 6d., and "Five-Figure Logarithmic and other Tables," by Alex. M'Aulay (Macmillan), 2s. 6d.

J. G. R. *Who is the publisher of Woodward's "Crystallography for Beginners" mentioned in THE SCHOOL WORLD for October, 1904?*

A. E. D. *Messrs. Simpkin, Marshall, Kent and Co.*

The School World.

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All contributions must be accompanied by the name and address of the author, though not necessarily for publication.

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SIXPENCE.

GREEK IN THE SECONDARY SCHOOL.

I.

By W. H. D. ROUSE, Litt.D.
Perse School, Cambridge.

I HAVE been asked to state briefly reasons why Greek should have a place in a liberal education, without entering on a controversy as to the claims of rival studies.

I assume that a liberal education must include training of all the mental powers up to a certain point. Amongst these are the power to (1) understand thought, and (2) to express thought; (3) power to use the trained intelligence in the search for intellectual truth; and (4) a sense of beauty. Besides these, there is (5), the will to learn, without which the powers are of no use.

These powers may be trained by other means than by Greek. The first two can be considerably developed by logic and the use of the mother tongue, especially if aided by Latin; the third by logic and the study of mathematics or natural science; the fourth by the study of a fine literature. But Greek stands alone in combining all these in a high degree, with the last two in the highest degree.

(1) and (2) hang together. The understanding can be tested only by expression; it is trained by presenting problems, easy at first and increasing in difficulty, to be solved. It is recognised that the supreme test of both is the translation of thoughts from one language to another. Greek is the language most capable of every variety of expression, of lights and shades of meaning so delicate that other languages often have no equivalent but full explanation. It can be as logical as Latin, and it has a grace and brightness all its own. Greek can produce the greatest variety of intellectual effects with the smallest possible effort. Its style ranges from the sublime to the lightest raillery, its matter includes every conceivable subject of human thought: poetry, drama, history, philosophy, oratory, romance, mathematics, natural science, geography, religion, political and commercial experiment.

(3) In the third matter Greek is specially useful, because it shows the various steps which searchers have actually taken in the search for truth, where

and why they succeeded or failed. Since practically every study or science was begun by the Greeks, there is material here to instruct, aid, or warn every enquirer. The study of beginnings in all subjects has a special charm; and Greek has all the beginnings.

But it is in the last two that Greek is supreme. For beauty, no language has ever come near it, not even English at its best. The sense of beauty, of proportion, moderation, dignity, and grace, was inborn in the Greeks, and found expression in whatever they did while in their prime; their very fortresses were beautiful, their pots and pans, their clothes, much more the creations of their imagination and fancy. In Greek, within the compass of a literature not too large to be mastered by the earnest student, we have the first and generally the best epic, lyric, tragic, and comic poets, historians and storytellers, philosophers and inspired teachers. The supreme writers of the world may be counted on two hands: of these England has two, mediæval Italy one, ancient Italy one, and all the rest are Greek. In the second rank, which can be called second only to so magnificent a first, Greece is only rivalled by England. Greek is the only original literature in Europe: all others shine with borrowed light. Perfection of form, which is essential to the very best work, is found in all the best Greek work, and hardly at all outside. Therefore, the student who wishes to chasten and develop his sense of beauty in things intellectual must go to Greece; nowhere else can he find his models. In this matter translations are of little or no use; for artistic beauty is the one thing which cannot be translated.

Not less conspicuous, but more, is the supremacy of Greece in the last point of all. Never has there been a race so indefatigable in the quest of truth, so honest and courageous in recognising it. A divine curiosity is their birthright. They asked first, What is? and not content with that, they asked next, Why is it? and if they did not always find out what is and why it is, they at least used the only possible way by which the questions could have been answered; they showed the way to their successors who did find out, or who yet may find out. Often where demonstration was impossible, an inspired guess hit the mark. If Democritus had never lived, when would the atomic theory have been thought of? And every teacher knows

how the pupil, especially the young pupil, is influenced by his work; let him pass his days amidst the intellectual enthusiasm of the Greeks, and he will catch some of it.

I expect to be told that this is all in the air, a sort of ideal which no school can ever come near; that the question concerns boys who can only give a short time to acquiring it. Critics point to the lamentable results of ten years' Greek at the public schools, and say the learners will not take away enough good to repay them. To this I reply, that my subject is the merits of Greek, not the merits of six months' Greek for a stupid boy, or ten years' Greek badly taught. At the same time, I acknowledge the practical force of the objection, which I will now ask leave to discuss.

In the first place, I have in view a curriculum made on a different plan from that which is now common: in which one modern language will be first begun, one ancient language after a year or two, and later a second modern language substituted for the first, with Greek super-added. Greek will thus come in at the age of 14 or 15, when the pupil's faculties are already trained, and his mind at its opening flower is just ready for the quickening pollen to be dropped into it. Moreover, I have in view methods of teaching which shall be living, rational, and therefore interesting to all live rational beings. Six months' Greek under these conditions will be a very different thing from the work of the Little-go Crammer. But a liberal education will include more than this. Between the age of 15 and the university are four years, amply sufficient to give a taste of the riches of Greek literature, which will leave the pupils hungry for more. If the blight of open scholarship examinations were removed, and with it early specialising, this study might go on side by side with the rest, until at 18 or 19 the boy should fix on his own special line. But even under present circumstances, a year and a half might be counted on. In this time, with the plan I have sketched, experiment has already proved that an effect may be made which shall be worthy of the effort.

II.

By E. L. MILNER-BARRY, M.A.
Mill Hill School.

THE animated discussion on the recommendations contained in the report of the Syndicate on Studies and Examinations, which took place at Cambridge on December 1st and the two following days, has contributed to focus the arguments against the proposed change upon one or two points. It may be well, therefore, to state the main objections which were urged against the scheme. First and foremost, the old cry, "the Church in danger," was raised, and we were told that the carrying of the report would mean the extinction of Greek in the smaller country grammar-schools from which the supply of candidates for Holy Orders was largely recruited, and the awful prospect was unfolded of the possibility of ordination without a knowledge of Greek. We are quite

prepared to admit that the opponents of the new scheme are entitled to make full use of the argument about the possibility of the extinction of the study of Greek in certain schools, though we do not ourselves believe that such a contingency is likely to occur, but to drag in an appeal to the consciences of the members of the Senate, and to attempt to array the forces of the Church against the proposed reform, strikes us as being altogether a mistaken and short-sighted policy. The question is entirely an educational one, and whether or not there is to be a divorce between theology and the Greek tongue may be safely left to the bench of bishops and their examining chaplains to determine. With regard to the more general question of the decay of the teaching of Greek on which so many speakers dwelt, it may be urged reasonably that a study which has been firmly rooted in this country for centuries, which is endowed by very substantial emoluments, and is traditional in the universities, the public schools, and for the higher branches of the Civil Service, is not likely to be seriously impaired because the meretricious modicum of Greek which a certain number of candidates now acquire—often for a mercenary motive—is allowed to go by the board in favour of some more rational study, and it may be advanced that where the universities have been thrown open to every type of student possessing a satisfactory general education, as they have been for the last five years in Germany, classical studies have more than held their own. Again, the fact that so many distinguished classical scholars within the University of Cambridge itself have expressed their approval of the report confirms us in our belief that there can be no question about the extinction of Greek or the weakening of Humanistic studies in general, but that a more careful selection of material may result in a direct gain to the classicists, whose pupils, under the new system, will probably be better and more carefully taught than they have been in the past.

The real question before the public, however, must not be allowed to be a hypothetical one, but must be confined to the one issue, whether on general grounds, in the interests of education as a whole, the only avenue to Arts degrees in our universities should lie through Latin and Greek. To this we would answer that, while admitting that Latin and Greek, if intelligently studied, provide a boy with the groundwork of a very high standard of education and fit him to take his place in the world as a scholar and as a man of culture, it is equally certain that boys who have been trained on Latin have entered the universities with natural abilities not a whit inferior to those brought up on both classical languages and have displayed in their special work powers of concentration and reasoning which show that the loss of such Greek as they would have acquired by legitimate study has not in any way impaired their mental calibre; and further, that German, the "soft option," to borrow a phrase, which they have studied instead of Greek, cannot be an altogether negligible quantity as a means of sound education.

Nothing is easier than to talk glibly about the Greek tongue, the spirit of Greek literature, the sacred flame of knowledge, &c.; but these high-sounding phrases have, after all, as many schoolmasters hold, but a very limited application when they are analysed in the searching light of actual experience and statistics. Are we to understand that the average passman is imbued with this spirit of Greek literature when he reaches the portals of his *Alma Mater*, where he must sometimes knock often before he gains admission, or are we to assume that his coach at the university applies to the scraps of Greek accidence and Xenophon which he brings with him the sacred flame which is to fire him with ambitions to plunge into the stimulating atmosphere of Greek life and thought?

If, however, it is argued that Greek is invaluable as a mental gymnastic, and that the substitution of any other study would be an inferior option, we would reply that not Greek, but Latin, is the mental gymnastic for a very large proportion of average boys. It is Latin, and not Greek, through which they learn to develop their reasoning powers: it is Latin, not Greek, which supplies that stern mental discipline, the grasp of syntax, the power to retranslate into another language; in fine, it is Latin which is of such sterling educative value. What comes afterwards is for the able boy the introduction to another language and the unlocking of Greek life and thought, but for many an average boy it is not infrequently a repetition of mere grammar grind, not particularly calculated to quicken his intelligence.

We maintain, then, that as an educative factor one classical language, be it Latin or Greek, may be held to supply the necessary mental gymnastic, and that afterwards free scope should be given for a bifurcation of studies, and we believe that Latin plus French and German offer a general basis of education for the average boy as thorough both in its intrinsic value and as a means to an end as the present system, which tends in many cases to bring the Greek language into contempt and to distort the true significance of education.

The reforms outlined in the report will, in our opinion, tend not to jeopardise classical studies in this country, but rather to strengthen and develop a system of education now in its infancy with us, but which is being carried out elsewhere with excellent results.

III.

By F. W. SANDERSON, M.A.
Oundle School.

THE question upon which the Editors have asked for an expression of opinion seems to have its general principle settled by the boys we have to deal with. Boys are not all alike, and even boys of ability are not all made in the same mould. As boys differ in all kinds of ways, it would seem essential that tastes and individual faculties should be taken into account in a well-organised scheme of education. A boy's faculties are more

likely to develop in an all-round manner if he is making headway in any one subject, and he is more likely to take an intellectual interest in his general studies if he is given the opportunity of sharpening his intellect by applying himself to subjects which are congenial to him. Let a boy's education proceed along the line his tastes and proclivities lead him, rather than by forcing him in a direction against his natural bent. I know that it is said a boy's natural tendency will be to choose the easiest course, but I hardly think, in these days, this statement will bear examination. There is little danger nowadays in consulting boys' tastes, when modern methods of schoolmastering are based on such sympathetic treatment. Let a boy have a well-organised training in either languages, mathematics, science, or even technics; let him, after a certain age, devote his chief energies to a main subject; let him feel that he is making progress in some subject; and let the other branches of education be taken in a subsidiary way. The tendency in the past has been to force all boys along the same groove, and that groove has been the classical groove. The boy's place in the school, and the opinion formed of his ability, have been too much ordered by one and the same subject. An attempt has been made to judge between the subjects, and to arrange them in an absolute order of merit. To my mind, this is doomed to failure if the subjects are looked at from their educational value for boys. There are boys whose minds can be developed by the classical languages, and whose appreciation of literature and all that is associated with it can be stimulated by such studies, and these, it is said, belong to the higher order; but there are others who can think best when they have the opportunity of thinking about things they see around them, of studying natural laws in laboratories, or of absorbing ideas in a general workshop, and these will be led by intellectual growth to take interest in other studies. To the question whether Greek shall form a necessary part of school education my answer must therefore be—everything depends upon the boy. For some boys, Yes; for others, No.

To give boys an opportunity of showing their talents the early education should not be specialised, and consequently scientific study should not be excluded. For public-school boys the curriculum up to the age of 15 must include languages (classical and modern), mathematics, science, and workshops. At 15, or a little sooner or later (again depending upon the boy), it ought to be possible for a boy to be placed on a side suited to his capacities, not from utilitarian motives, but because he will be best educated on it. On the classical side Greek will be taken in the usual classical course, with mathematics, French, and German, and, if time permits, science. On the science side the main subjects will be mathematics and science. There will also be provided substantial time for French and German, both languages being a necessary equipment for scientific studies. It is possible for these languages to be taught so

as to give sound mental training and discipline. It is said that French and German cannot be made as efficient for mental training as Latin and Greek; that, amongst other things, the resistance they offer is not enough; but again, if I may labour the point, all depends upon the boy. The fact is, and it may be a regrettable fact, but fact it remains, that a goodly number of boys in a public school—against all efforts—doggedly refuse to be educated by the classical languages. I would plead for these boys that they may very possibly have good reason for their obstinacy, and that they be offered some other instrument; and I have some faith that, at a later stage, even whilst at school, they will, in many cases, return to classics—especially if “classics” means an acquiring of a wider knowledge of classical literature than usually falls to the lot of boys below the sixth form. The classical teaching required for these “converted” boys will have to be of a new kind. Perhaps a reformation such as has taken place in mathematics may come over classical teaching, and then the best things will not be left until the end. In any case, this teaching will hardly adapt itself to modern examinations. Possibly something might be done by inspection; but may not something be left for the schoolmaster that he may do, and not have it enquired into or examined?

I have said nothing about literature teaching, because it is agreed that every attempt must be made to encourage the love of literature in all boys, and it is agreed that a sufficient amount of school time should be given to it, and it is possibly also agreed that the way to examine it is not easy to find. In literature I would include Greek and Roman literature for all boys. Those who, unfortunately, cannot read the original Latin and Greek must be content to get what they can from translations—English, French, or German. Many of these translations are in themselves classics. I believe that teaching on these lines by a sympathetic teacher will draw some boys of talent towards the study of Latin and Greek. At any rate, an attempt will have been made to give boys something of that which classicists are contending, and rightly contending, is essential for the education of public-school boys, but which many even of the classicists themselves do not believe that compulsory Greek for *all* boys is the best way of providing.

Cambridge Greek Testament for Schools and Colleges. The Epistle to the Thessalonians. Edited by Dr. G. G. Findlay. lxxi. + 248 pp. (Cambridge University Press.) 3s.—Eleven pages of text to more than three hundred of commentary reminds one of the battle of Plassy. But the topics opened up by St. Paul's Epistles are so many and so important that we cannot say that this proportion is unjust. The work seems to us to come near the standard of that admirable edition of the “Pastoral Epistles” by Mr. Barnard, in the same series, in all respects except one; it is less concise. The notes are searching and complete, but they are too full for any but advanced students to master. This edition is rather for the college than the school. We are glad to welcome it, however, on its own terms: good commentaries on the Greek Bible are much wanted.

SECONDARY SCHOOLS AND THE UNIVERSITIES.

I.—THE UNIVERSITY OF LONDON.

THE re-constitution of the University of London four years ago came at a very opportune moment for the cause of education in London. The work of the University under its new constitution falls into three great departments, at the head of each of which is a Registrar. One department deals with the work carried on by the old University, namely, the external examinations leading up to degrees. The second deals with the internal work—the teaching side of the University—as carried on in the various colleges and institutions associated with the University. The third includes the university extension work transferred to the University by the London Society for the Extension of University Teaching, and the inspection and examination of schools. This third and youngest department was only properly constituted in 1902, when Dr. R. D. Roberts was appointed Registrar, and the work of the London Society was formally transferred to the University. While the one side of the department, that of the extension of university teaching, was in full working order, the other side, relating to the inspection and examination of schools, was all to be created. The Board addressed itself without delay to the elaboration of a scheme for the inspection of schools and the award of school-leaving certificates, and the thoroughness and intelligence with which this work was done is shown by the fact that the school-leaving certificate scheme of the University of London—the first to come into active operation—is, in all its essential features, in the closest accord with the scheme published eighteen months later by the Consultative Committee of the Board of Education.

Before dealing in detail with the features of this Leaving Certificate Scheme of the University, it may be well to say a word about the Inspection Scheme. The points to be kept in view in the inspection of a school are set out in the scheme of the University as follows:—

“Enquiry into the aims of the school as related to the circumstances under which it is placed, and the general conception of education which it seeks to realise; consideration of its curriculum and arrangements as adapted to its aims, the distribution of subjects in the time-table, the grading and size of classes, the adequacy of the number, qualifications, and remuneration of the teaching staff, and the organisation and equipment of the school for studies, including libraries, physical training, recreation and discipline.”

The inspection further includes the hearing by the Inspector of lessons given by the staff, the inspection of the classes at work, and the taking by the Inspector, at his discretion, of any of the classes, so as to enable him to note the discipline, tone, alertness of mind and intelligence shown by the class, as well as the teaching of the teacher.

Further, if the school authorities desire it, a review of the ordinary school examination may form part of the inspection. In such cases the teachers furnish to the Inspectors a number of questions covering the work of the session, out of which the Inspector may select those to be set in the examination, modifying them in any way he thinks well. The answers of the pupils are then corrected by the staff, and submitted to the Inspectors for revision. The Inspectors in this way act as a kind of court of revision, and, at the same time, have the opportunity of noting valuable additional evidence bearing upon the condition and efficiency of the school. The Inspectors are instructed to submit their report in two parts: first, a general report setting out the conclusions and recommendations (which, if published by the school authorities, must be published *in extenso*); and, second, an Appendix, not intended for publication, containing detailed criticisms and references to individual departments and classes of the school work, and designed especially to be of service to the staff of the school.

The school-leaving certificate of the University is only awarded to pupils who have pursued an approved course of study for a period of years at a school under inspection approved by the University and who pass the School Examination (Matriculation Standard) in the requisite subjects. As every holder of a leaving certificate is entitled to register as a matriculated student of the University, he must pass in accordance with the regulations of the Matriculation examination affecting the subjects to be taken. The certificate is not awarded until the candidate is actually leaving school. In years gone by the Matriculation examination of the University of London served for a large number of schools and pupils the purpose of a leaving certificate examination, and the University in establishing its leaving certificate decided that the minimum standard should be that of matriculation; in other words, that every leaving certificate must satisfy in all respects the requirements of matriculation, so that any candidate obtaining a leaving certificate of the University of London would become thereby at once a matriculated student of the University provided he had reached the minimum age fixed for matriculation. Every candidate who obtains a leaving certificate must, therefore, have reached the matriculation standard in the examination in the following subjects:—

- 1.—English.
- 2.—Elementary mathematics.
- 3.—Either Latin or one of a specified number of science subjects.
- 4 and 5.—Any two other optional subjects, of which, if Latin be not taken, one must be a language.

The examination in connection with which the leaving certificate is awarded is known as "The School Examination (Matriculation Standard)" and was held last year at the time of the Matriculation examination in June, and also in July, a larger number of schools taking the examination in July. Similar arrangements will be made for 1905. Any

school desiring to present candidates for the leaving certificate must make formal application to the University and submit at the same time a general statement of the complete course of instruction given in the school and the curriculum of study pursued by the candidates. The papers set will either be matriculation papers or papers of an equivalent standard, the school being at liberty to submit for the approval of the University its own schedule of work in a particular subject, upon which, if the University approves, a special paper may be set, the school paying in that case an additional fee.

Although there is not at present more than one grade of leaving certificate, the University has by an ingenious arrangement made provision for the case of schools desiring to submit candidates for examination at a higher stage than that of matriculation. The plan is as follows: "Special Advanced" papers of higher standard may be set for particular schools or in particular subjects. Many schools now keep their pupils after matriculation until they have passed the University Intermediate examination in arts or sciences, and the standard of these special advanced papers is such as to meet the case of these more advanced pupils. A pupil who has passed the School Examination (Matriculation Standard) and who, staying on at school, passes in a subsequent year in a Special Advanced paper or papers, will have this fact recorded upon the certificate when it is awarded.

It may be asked, what is the value of a leaving certificate as compared with a matriculation certificate if the standard of the examination passed in the two cases is the same? The reply is clear. The leaving certificate sets out very much more than mere success in an examination. Upon it is recorded the period during which the candidate has been a pupil at the inspected school or schools, the subjects of the curriculum through which he has passed, and there is further afforded on the certificate an opportunity for a statement, if desired by the authorities of the school, of any distinction obtained by the pupil in any form of manual, artistic or technical skill, or any general or special capacity displayed which is not tested by the examination. Thus, when a pupil leaves school at, say, 18 or 19, the leaving certificate would give a complete record of the educational career of the pupil up to that stage, setting out the time at which the School Examination (Matriculation Standard) had been passed, the special advanced papers of higher standard taken subsequently in successive years, and, if the candidate had also passed, before leaving school, the Intermediate examination of the University, that fact would also be recorded upon the certificate.

During the year 1903, the first year in which the leaving certificates were awarded, five schools were admitted to the privilege of submitting candidates for leaving certificates, and fifty-seven candidates passed the examination. In 1904 the number of schools presenting candidates for the examination rose to twelve, and ninety-two candi-

dates passed the examination, the average age of the successful candidates being seventeen and a-half years.

The University has been recognised by the Board of Education under Clause 3 of the Board of Education Act, 1899, as an authority under the Board for the inspection of schools, and several inspections have been carried on jointly by the Board of Education and the University.

In 1904 new regulations were issued by the War Office for candidates desiring to compete for commissions in the regular Army. In future, every candidate before being admitted to the Competitive Examination will be required either to present a leaving certificate, awarded by some authority approved by the War Office, or to pass a qualifying examination. The University of London is one of the bodies whose leaving certificates are recognised by the Army Council. The leaving certificate must include the subjects required by the regulations of the Army Council; the candidate must be not less than seventeen years of age, and must have attended three years' continuous teaching, with satisfactory conduct, in a properly inspected school.

There is a further point of great importance. Negotiations have for some months been going on between the University of London and the Universities of Oxford and Cambridge with a view to the mutual recognition of certificates for admission to the University. The Universities of London and Cambridge have already come to an understanding by which the London Matriculation Examination, under certain conditions, is accepted by Cambridge in lieu of the Previous Examination, while the Previous Examination of Cambridge and the Senior Local Examination of that University are accepted under certain conditions in lieu of the Matriculation Examination of the University of London. Negotiations are still in progress with the University of Oxford. If these are satisfactorily concluded, one most important step in the direction contemplated by the Consultative Committee will have been taken. A school will then be able on one examination, such as the London Matriculation, or the higher examination of the Oxford and Cambridge Schools Examination Board, or the Senior Local Examination of Oxford or Cambridge, to send its pupils after leaving school to any of the three universities, provided, of course, the conditions have been satisfied. This will do away with the necessity of having separate classes for preparation for the entrance examinations of the several universities. The scheme for mutual recognition of certificates considered by the three universities includes the formation of a Standing Committee of representatives of the three universities for the purpose of considering any points of difficulty that might hereafter arise. It will be seen that, practically, all the essential features of the scheme of the Consultative Committee, except one, will thus be brought into operation by the voluntary co-operation of the three older universities. The one point not included is that of the suggested

co-operation of the staff of a school with the external examiners in setting the papers and marking the answers of the candidates. The purpose of this suggestion, obviously, is to bring the examining and the teaching into the closest touch with one another. Much may be done in this direction short of the actual setting of the papers and marking of the answers of the candidates by the school staff. It will have been made clear, from the account given of the system of the University of London, that, while the staff of a school have no share either in setting the papers or in marking the answers, which are entirely in the hands of the external examiners, yet by the liberty given to a school to submit, with the approval of the University, its own schedule of work done in the school as a basis of the examination, the examiners are brought into close touch with the teaching.

One other feature in the complete scheme of the University of London needs to be mentioned. With a view to schools that have been accustomed to take an examination like the Oxford and Cambridge Junior Local Examination for pupils who have not yet reached the matriculation standard, the University has established a Junior Schools Examination, which was held for the first time last July. The characteristics of this examination are that, unlike the Junior Local Examinations, individual pupils, without reference to the school from which they come, cannot be entered for the examination. A school may apply to have the examination for its pupils of the particular grade, provided it is under inspection approved by the University, but only those pupils can receive certificates who have been under regular tuition for a period of at least three years either at that or another inspected school. The pupil must, further, have pursued a course of study in the subjects of a curriculum approved for the school or schools, which curriculum must include adequate instruction in English literature, one modern language, and some approved science subject.

The University, by its scheme of Inspection, with its Junior Schools Examination and its School Examination (Matriculation Standard), with special advanced papers of higher standard, and its leaving certificate, now possesses a complete machinery for doing all that may be needed by a school desiring to associate itself with one university. Some schools have already placed themselves in this way under the direction of the University for inspection at such intervals as may be necessary, and for the holding of the two examinations referred to annually for the pupils who have reached the necessary stages. What the University is prepared to do for a single school it is prepared to do, if desired, for the whole of the schools under the control of a local authority. This will make it possible to unify the secondary education in the area controlled by the authority, and to maintain suitable standards, while the schools will be relieved from the necessity of having to prepare candidates for a variety of different examinations.

ORAL EXAMINATIONS IN MODERN LANGUAGES.

By E. R. EDWARDS, Docteur de l'Université de Paris.
Inspector for the University of London.

ONCE upon a time the following memorial was presented to the Senate of the University of London by the committee of the Modern Language Association: "Being informed that the Senate of the University of London have now before them the proposition to introduce a *vivà voce* test in their French and German examinations, the committee beg respectfully to submit the following considerations :

"(1) No knowledge of a modern language can be considered adequate that does not include the power of pronouncing it and understanding it when spoken.

"(2) There is a general agreement among teachers that oral methods should be freely used in the earlier stages.

"(3) At a more advanced stage the judicious use of such methods is found to contribute materially to the attainment of sound scholarship. On the practical value of the conversational knowledge of a language nothing need be said.

"(4) In all modern language examinations of foreign universities, as far as we are aware, a *vivà voce* examination forms an integral part.

"(5) We believe that no practical difficulty would be found in arranging for the conduct of a *vivà voce* examination. Although it might be difficult to examine more than a select number of candidates in conversational French or German, the same objection would not apply to dictation and a simple reading test."

This was some years ago. Many things have happened in the modern language world during those years. Now, in 1905, we can perhaps say that the importance of oral examinations is generally admitted.

In the proposals for a system of school certificates lately issued by the Board of Education the Consultative Committee are of opinion, in Section 15, "that an oral examination should always be held in the case of modern languages."

The regulations for the School Examination (Matriculation and Higher Standard) of the University of London state that school-leaving certificates are awarded to pupils who "have satisfied an oral test in modern languages and in any other subject that may be thought desirable."

In the Junior Schools Examination of the same university the inspectors or other examiners appointed by the university are directed "to hold, in addition to the general oral examination of the class, a supplementary oral examination of every candidate for the certificate in order to satisfy themselves that the pupil has attained in each subject the standard fixed by the university."

Two other sets of regulations issued in 1904, both likely to cause important changes in the work and methods of some of our secondary schools, insist on an oral test for modern languages, viz., the regulations for the Oxford and Cambridge Leaving Certificate Examination, and those for the Army Qualifying Examination.

These instances will suffice to show that the necessity for oral tests, especially in connection

with the examinations in modern languages, is being generally recognised in our country.

But the institution of oral examinations in their present form as a serious test is only the outward and visible sign of the great reform movement which is making itself felt everywhere. A better method of teaching modern languages has been introduced, and has come to stay. The changes are most marked in the early stages of language instruction. The general tendencies of the new school are well summed up in the following recommendations of the International Phonetic Association :

(1) The first thing to be studied in a foreign language is not the more or less archaic language of literature, but the spoken language of daily conversation.

(2) The teacher's first care should be to make his pupils perfectly familiar with the sounds of the foreign language. To attain this end he will make use of a phonetic transcription, which should be employed to the exclusion of the traditional spelling during the first period.

(3) The teacher's next aim should be to impart a perfect command of the commonest phrases and idioms of the foreign language. To obtain this result he will use connected texts, dialogues, descriptions and narratives, all as easy, natural, and interesting as possible.

(4) Grammar will at first be taught inductively by grouping together and drawing general conclusions from such facts as are observed in reading. A more systematic study is to be kept for a later stage.

(5) The teacher will endeavour to connect the words of the foreign language directly with the ideas they express, or with other words of the same language, not with those of the mother-tongue. Translation will therefore be replaced, as far as possible, by object-lessons, picture-lessons, and explanations in the foreign language.

(6) When, at a later period, written work is introduced, it will consist at first of the reproduction of matter already read and explained, then the reproduction of stories, &c., which the pupils have heard the teacher tell; free composition will come next; translation from and into the foreign language is to be kept till the end.

Of course the reform in the majority of our schools is not by any means at this stage yet—old traditions and old methods die hard in our country—but the tendency is quite clear, it only remains now to work out the proper transition from this sound elementary stage to higher work, such as the study of the literature and the older forms of the language. These six recommendations are fairly representative of the direct or inductive method as opposed to the old method, which consisted in learning grammatical rules by heart, and in translating disconnected sentences.

To teach the beginner to pronounce, understand, and speak the living language is the object of the first stage of language teaching, and this is exactly what is tested by the oral examination. If we also add above, to write the living language, the test for the elementary stage is completed by dictation and free composition.

As to the method and conduct of oral examinations there are many opinions. In England we have not yet learnt to believe in the secondary teacher sufficiently to entrust him with a share

in the examination of his pupils. But it is a great step forward to find this suggestion among the recommendations made by the Consultative Committee to the Board of Education. In Norway, it seems to be the rule that the candidates are examined orally by their own teacher, while the inspector or external examiner sits by and takes notes. There are advantages and disadvantages connected with such an arrangement. Perhaps our own football experience might have taught us that it is quite possible to see fair-play on the home ground with a non-local referee. For testing the capacity of the teachers and noting the methods employed in a class, the most useful part for an inspector to take is probably that of the referee in the background, but in any serious attempt to make an order of merit or to judge the exact standard in modern language of individual candidates, nothing can take the place of the individual oral examination. Experience has shown that the oral examiner can get through his work twice as quickly, and nearly as efficiently, if the candidates are sent in to him two at a time. And fifteen minutes is the least space of time the examiner should allow himself before he is in a position to place the average candidate in one of the many sub-divisions that separate the best from the worst. These last give little trouble; they are generally obviously above and obviously below the average; the difficulty comes in judging that large number of candidates capable of getting from 25 to 50 per cent. of the marks. In justice to these, and to himself, a quarter of an hour should be the examiner's minimum.

I remember, years ago, being orally examined myself by one of the many "teachers" of modern languages who used to impose on the guileless educational world of those days. I remember, too, that he polished off about forty of us in less than an hour, which works out at something under a minute and a half each—a world's record, I sincerely hope. But another oral examiner I knew used to boast that no sooner had the candidate uttered the innocent words, *Bonjour, monsieur*, than his own mind was made up, and he had placed the candidate with unerring accuracy. If the examining days of this easy-going genius had not been cut short, there is little doubt he would have succeeded by this time in doing his oral examining in bed by means of telepathetic messages or phonetic recording cylinders. A third examiner, not a foreigner, was in some ways more remarkable than my first two friends, for he did not even require to hear *Bonjour, monsieur*; his oral examination in modern languages was always carried on entirely in English, which was patriotic of him, and most acceptable to his examinees. But I think I can venture to say that oral examiners, nowadays, are slower, and less inclined to take snap-shots, and that phonetic training has only made them more diffident about deciding on a whole sound system and basis of articulation after hearing nine or ten sounds.

Every competent examiner has his own way of

testing a candidate's knowledge, but oral examination must at least include tests of (1) audition; (2) power of expression; (3) pronunciation. That is, the first is the test of the pupil's ability to understand the spoken foreign language, implying, also, the possession of a small useful vocabulary of the common words of the language and the training in intelligent guessing at the meaning of new words in a context of simple well-known words. In the second place, the candidate must show his ability to express simple ideas in the foreign language, he must show a knowledge of simple, useful phrases, proving that his instruction in the elementary stages was by means of complete and connected sentences, and not by isolated words and lists of exceptions; that is, he must not only know the grammar, but he must show that he can apply readily and correctly his knowledge of the generalisations implied.

These two stages, and particularly the first, are best tested by a short story, or complete paragraph. The examiner tells it twice, asks if any of the less common words are new to his hearers, explains them in the simplest every-day words, and then has half the story repeated by each of the two candidates before him. Then one of the candidates undergoes a cross-examination, testing not only audition and power of expression, but also, if the piece is well chosen, a knowledge of some of the common facts of history, geography, or literature, life and ways, &c., of the people and country in question. And, while this is going on, the other candidate had a few minutes in which to study a picture, or think over a given subject, to prove further his power of expressing simple thoughts in the foreign language.

All this time the examiner has had opportunities of testing the pronunciation, but in the case of nervous candidates it is safer to supplement the pronunciation test by a few lines of reading, and good marks should be given to candidates showing evidence of such phonetic training as to be able to produce approximately the sounds and stress of the foreign language. The competent examiner will very clearly distinguish between important and unimportant mistakes in pronunciation. Candidates who have passed through the hands of teachers with no phonetic training will often completely ignore significant sounds unknown to the sound system of their mother-tongue, such as the nasal vowels and the front rounded vowels in French, and yet produce, with much self-satisfaction, all sorts of impossible "liaisons."

Oral examinations of advanced students would, of course, go much farther than the stages mentioned above, my setting out of which will, I hope, arouse much criticism.

Lectures Faciles pour les Commencants. By J. Lazare. 89 pp. (Hachette.) 8d.—This useful little volume contains a number of object-lessons on such topics as writing a letter, going to the grocer, domestic animals, &c. These are followed by anecdotes of varying antiquity, and by a number of short poems. There are no notes, and the vocabulary is not complete.

STUDIES IN SCHOOL MANAGEMENT.

II.—SCHOOL RECORDS AND REGISTERS, TEACHERS' WORK BOOKS AND PUPILS' JOURNALS.

By J. W. JARVIS.

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SCHOOL records should consist of a diary or log-book and a well-bound MSS. book in which the general syllabus of the school is entered.

The *Diary* should be kept by the headmaster, who is advised to enter in it from time to time such events as visits of governors, absence, illness on the part of any of the school staff, holidays, or any special circumstances affecting the school that may, for the sake of future reference or for any other reason, deserve to be recorded. As the diary should form a history of the school, it should be well bound and contain not less than 250-300 pages.

The book in which the syllabus is entered should be of foolscap size and contain about 150 pages of ruled paper of good quality, well bound together. On pp. 2 and 3 the syllabus of Form I. should be entered; on pp. 3 and 4, Form II.; on pp. 4 and 5, Form III., and so on. The reason double pages are suggested lies in the fact that it is found extremely useful, not only to put the actual amount of the subject for study, but also to name the book used by the teacher or the pupil in another column, and in a narrow column on the right the cost of the book. At once one can see the syllabus, the book used, and its cost. This saves a good deal of trouble, is useful for future reference, and is especially helpful to a headmaster at examination time. Visitors to the school (especially foreign ones) are helped considerably by a glance at a complete record like this. The same order of subjects should be preserved for all the Forms, so that by turning the leaves over the graduation in difficulty of the different studies can be seen at once. It is also an effectual guarantee against overlapping. It is recommended that each form-master is supplied with a copy of the complete syllabus of the school, so that he can tell what general direction his work should take.

FORM-MASTER'S RECORD BOOK.

This should consist of about 30 pages of foolscap bound in stiff cardboard covers, and intended to last for one year only. On page 1 the name of the school, form, form-master, and date should be clearly stated, and on pp. 2 and 3 the complete syllabus for the year and list of books used may be written. Then the remainder of the book can be divided into three equal parts for the three terms' work. At the beginning of Part I. a third of the amount of work set in the syllabus can be written, and this should be completed about two weeks before the close of the term to allow for revision and examination. Some teachers prefer to keep a record of what is done week by week, others only enter the date when a special branch of the

work is ended and a new rule begun. The weekly summary is advisable, and for this purpose the remaining pages should be ruled down the middle, thus making the page show the progress for two weeks. Narrower columns than these are difficult to fill in, more difficult to read, and, from the abbreviations which are bound to be used, most difficult to understand. It should be the aim of the form-master to keep this diary as clearly as possible, so that the work of the term can be traced week by week without reference to the pages of the text-book used or to any other source of information. The questions set at the formal written examination at the end of the term should be entered on left-hand pages, and, on the right-hand pages corresponding, the teacher's criticism of the results obtained and points to be noticed in the further instruction next term should be written. A detailed criticism of everything is not necessary. Before the writer lies a book in which the teacher (evidently a highly conscientious person) has felt it her bounden duty to insert remarks upon all the work, and the result is a closely-written page of MS. which is not worth wading through, because the bulk of the comments are not suggestive, nor can they be regarded as conclusive. They are vague, expressed in general terms, and often laboured. If the results are good, further comments are needless, and no teacher should be afraid of leaving blank spaces. Perhaps the best practical guide which can be given for filling this record-book is to assume that you are leaving the Form at the end of the first term for a well-deserved promotion, and that your successor is a close and deeply-valued friend whom you wish to take up the work you are leaving with as little trouble and as clear an insight into the condition of the class as possible. If the diary is kept in this spirit, there need be no fear about the record not being a satisfactory one.

FORM-MASTER'S MARK BOOK.

Another foolscap book, ruled vertically as well as horizontally, bound in a stiff cover and intended to last for a year only, should be used. At the beginning of the book the name of the pupil, his age, and the address of the parent or guardian should be clearly stated, and these addresses should be carefully verified by each teacher just before the close of each term. The importance of the name of the parent and address cannot be overstated, for nothing is more exasperating than to be asked to write about a pupil, and only the child's name and address is supplied. On page 2 there is a space for the name and initials of the scholar, and then follow columns for marks. One column a week will be sufficient, and, as there are about fourteen weeks in a term, fourteen columns will be easily ruled on the same page as the name, together with a fly-leaf. When this fly-leaf is turned over the two open pages will appear as a mark-sheet showing the result of the terminal examination expressed in figures. This result is intended to be copied on a report form and sent home. One column should be reserved for con-

duct, another for attention to study, and a third for attendance, and these will be sufficient. Turn the fly-leaf again, and we have columns for the weekly totals of the second term without re-writing the names of the pupils; the next two pages give us the mark-sheet for the end of the second term, and so on for the third. On the last page can be written the reason why any pupil is not recommended for promotion, and at the close of the year this book can be placed in the hands of the headmaster, who will often require it for interviews with parents, or for purposes of writing testimonials, &c. It is hoped that all teachers will insist upon the pupils adding up their own marks, even though they make mistakes. Mistresses are especially fond of relieving children of responsibility by taking the burden upon themselves after school hours. If possible, mark-totalling should be done by the class in school-time.

ATTENDANCE REGISTERS.

These must necessarily be kept by each class teacher. Those of foolscap size, bound in stiff covers and containing a sufficient number of pages to last for one year, are recommended. Lines ruled vertically and horizontally give small squares in which the mark for attendance or absence can be placed, and by cutting the interior pages into fly-leaves the necessity for writing the names more than once is obviated. In the first column should be placed the pupil's number in the Admission Register (a general register or roll of all who come to the school). In the next column the age in years and months at the beginning of the year can be inserted, and in a wider column the name and initials. These names should be in alphabetic order for easy reference, and, if every fifth horizontal line can be drawn thicker, counting is facilitated. Presence can be denoted by strokes in a slanting direction, absences by O, and in some schools early attendances are marked in one coloured ink and late ones in another. A thicker vertical line shows the end of each week, and at the top of the page the date of the ending of the week should be inserted. When the term ends the attendances can be added up and entered in column for the total and also upon the pupil's report form. At the bottom of each column the number of pupils in attendance each day should be inserted, and this number should agree with the number actually present in the class. It is not necessary for the teacher to call the names over each time the register is marked. The absence of a pupil from his particular seat or the difference between the number present and the number on the roll will be a sufficient indication, and the teacher by a rapid inquiry can soon determine who is absent; but bear in mind that the returns in this register must be accurate and its entries should be regarded as those from which there can be no appeal. At the back of the register some lines should be ruled for entries in special cases. Thus, June 10th, heavy rainstorm in morning; December 16th, dense fog, will probably account for a sudden fall in the attendance on those days.

THE PUPIL'S JOURNAL.

In nearly all schools this forms an important part of the weekly record and it serves several purposes very completely. It is an excellent method of communication between the parent and the teacher, being regular and systematic, and it accustoms the children to book-keeping and diary-keeping on their own account, and incidentally gives them an insight into certain mathematical calculations, e.g., averages, percentages and graphical representation. The book which lies before me is 7 inches long by 4½ inches wide, so it easily lies among the other text-books in use by

Week ending.....190

SUBJECT.	M.	Tu.	W.	Th.	F.	MARKS.
Homework ..						
Arithmetic ..						
Algebra ..						
Writing and Composition }						
English						
Drawing						
Geography ..						
History						
French						
Conduct						
Journal						
TOTAL						
No. of half-days absent.....						
No. of marks gained by head boy.....						
Place in Form.....			No. of boys in Form.....			
Master's initials.....						
Parent's signature.....						

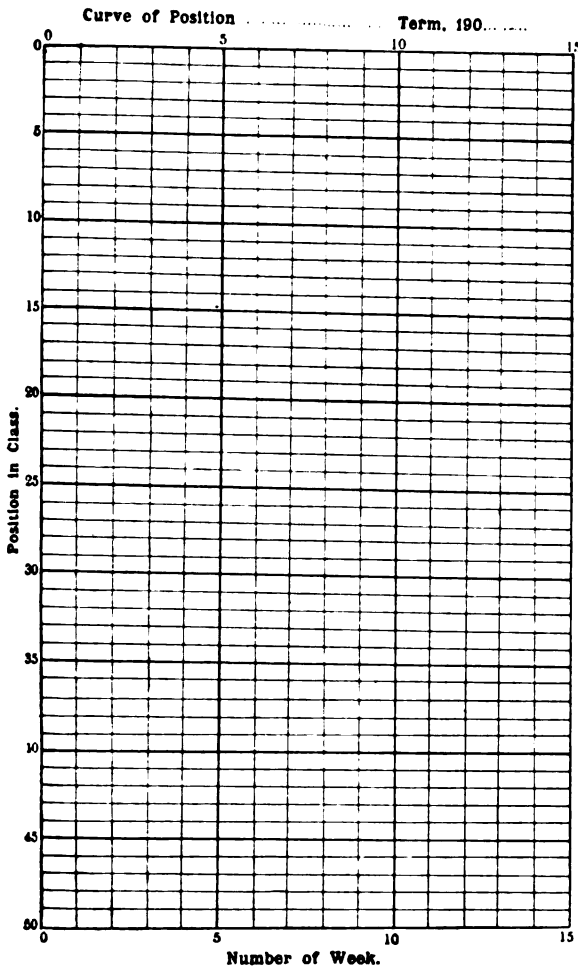
the pupil. It is bound in a stiff cover with corners rounded like Baedeker's guide-books. On the cover is printed the school crest, the name of the school and the words "Name" and "Form." On the inside of the cover are printed four simple rules which may be varied to suit the requirements of each school, but whatever variation is made these rules should be simple, few and expressed in a direct manner. They read as follows:—

(1) Five marks are given for each home-lesson done really well. Four or three marks indicate that the form-master is satisfied. Less than

three marks show that the lesson has been ill-prepared or neglected.

(2) Five marks are given each day for good conduct. This number is reduced for unpunctuality, carelessness, neglect or some misdoing.

(3) Every three weeks the scholars who have given satisfaction are dismissed at 3.30 p.m., whilst the rest are detained for an hour or more, according to the gravity of the offence in each case. No boy is detained at the school after 5 p.m. at any time.



(4) Prizes are awarded once a year to the boys who gain the highest number of marks in each Form.

NOTE.—Parents are requested to examine the Journal at least once a week and to sign their names in the place provided.

There are forty-two pages in the book, one for each school week, ruled as shown on page 50.

Five marks are given if the Journal is neatly and correctly kept, and this is assessed by the master before the total is made up; the other items explain themselves, and serve to show the parents the exact position of the pupil in the class.

Every Monday the books are inspected, and the parents willingly co-operate by signing in the space provided at the foot of the page. The last three pages of the book are ruled in squares in order that a curve may be drawn each week to illustrate the upward or downward career of the scholar. Each page represents a term, the vertical lines the weeks, the horizontal lines the position in class. Note, however, the numbering of the latter. If we begin with 0 in the bottom left-hand corner and there are 40 boys in the class, then the bottom pupil's curve will be at the top, and the boy who is continuously near the top for the whole term will be represented by a line nearly at the foot of the diagram. This defect is avoided by reversing the numbers, and the top boy for the first week begins at the left-hand top corner. This curve has proved very valuable. It is a bit of applied mathematics in a moral sense, and it has really led the pupil to attempt to keep a straight path in his school career. The last two pages of the book are kept for letters of excuse, &c., from home, and attention can be drawn to their frequency if necessary.

The Journal is not used by Form I. The pupils (average age, 8 years) are too young to be exposed to the strain which the keeping of a book like this entails, and if it falls upon the teacher, the process is valueless. Record keeping in Form I. is rather to be deprecated than encouraged; the performances of the little team are too irregular to be recorded, and the first year of school life can be better spent in the full enjoyment of the new world of lessons than in solemnly recording averages and percentages of naturally very indifferent work. Forms V. and VI. are exempt from journal keeping. It is time now that boys should become self-reliant and learn to manage their own affairs without too much control from home or from the school. The Terminal Report to the parents should be sufficient for the older pupils. Of course, idleness and slackness in work cannot be tolerated, but the vigilance of the form-master, vigorously supported by the headmaster, generally meets these cases.

Finally, the book to which the teacher will now have to concentrate his attention is his record of the work done week by week. As secondary schools come under inspection, this is the book from which inspectors will derive most useful help in forming an estimate of the work done by the pupils and of the capacity of the teacher. If it is well arranged, orderly, and self-explanatory, then it is evidence that the work in that class-room is likely to be orderly, well arranged, and productive of good to the pupils. If it is disorderly, confused and full of references to books which are not to hand, then the teacher must not be disappointed with the estimate which is naturally formed of his work. It is worth our while to study this matter carefully, but we must not let our zeal for book-keeping carry us too far. What is wanted in school records is not much, but clearness and system, and if these are evident in the records we can all feel confident that they will be reflected in the work of our children.

LANTERNS FOR SCHOOL USE.

By ALBERT GRIFFITHS, D.Sc.

Lecturer on Physics at the Birkbeck College, London.

A TEACHER who wants to know all about the lantern, preparatory to an interview with a dealer, cannot do better than pay a visit to the library of H.M. Patent Office, Southampton Street, Chancery Lane, E.C., where he will find a score or more technical works on this important instrument.

It may appear invidious to mention certain books, when so many are good; but of those in English may be mentioned, "Optical Projection," by Lewis Wright (Longmans); of those in German a small book dealing specially and thoroughly with our subject, "Das Skioptikon in der Schule," Carl Freyer (Dresden, 1903, Verlag des "Apollo photogr. Litteratur"); of French books, "Traité Général des Projections," by Eugène Trutat (Paris, Charles Mendel).

The last-mentioned work consists of two volumes, and is a most searching text-book. In addition to general details of the construction and use of the instrument, it devotes special sections to the use of the lantern in the school, in the Lycée, and at the University. M. Trutat thinks that the lantern should only be used occasionally at schools, and that its exhibition should be of the nature of a reward; but, in the opinion of the present writer, it should be used frequently and as a matter of course, and the only practical limits to its use should be want of space and money.

The optical lantern consists of the following parts:—

(a) A body (to contain the source of light) fitted with a short cylindrical tube to hold the condenser, a stage for the slide, and front tubes to carry the objective.

(b) A condenser to gather the rays from the source of light or illuminant, and to concentrate them on the slide objective.

(c) An objective to produce an image of the slide on the screen.

The diagram (Fig. 1) illustrates the preceding requirements.

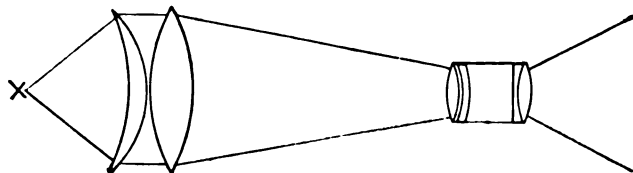


FIG. 1.

The illuminant is on the extreme left; the condenser is (in the figure) a combination of two lenses placed close together; whilst the objective consists of a couple of convex lenses at opposite ends of a tube. The body is not shown in the figure. The carrier for the slide is immediately to the right of the condenser.

A complete lantern (omitting for the present the illuminant) good enough for school use can be bought for from £3 to £5. At schools, however, where science is taught it is often advisable to obtain images of real things on the screen. As an example may be mentioned the gold leaves of an electroscope; here the leaves practically take the place of a slide, and we deal with what is called vertical projection. Another example arises when iron filings are scattered on a plate of glass over a magnet to show the lines of force in the field; here the glass plate is most conveniently arranged in a horizontal position, and we deal with what is called horizontal projection; this involves a decided modification of the ordinary lantern.

If the lantern is intended to be used regularly in one room, and the school possesses a physicist who is good at optics, it is best for the details of the lantern to be devised with respect to the various purposes for which it is intended. The writer has under his care in the Physics Lecture Theatre of the Birkbeck College two lanterns with accessories planned by his predecessor, Dr. Clay. They are not expensive, and will take much larger pieces of apparatus than is usual with lanterns costing from £10 to £12. They would, however, be very awkward things to move from room to room. If the lantern has to be moved from place to place, there is naturally an advantage in having a compact, well-built lantern. Messrs. Reynolds and Branson, of Leeds, sell what they call a "Universal Science Lantern," with lime-light fitting, in travelling-box, for £9. Any good dealers sell corresponding instruments for vertical and horizontal projection.

The writer has seen so many pleased and interested faces in his class, as the result of lantern experiments, that he is loth to leave the subject of optical projection. The image of a flat tank containing water under electrolysis never fails to give delight, and the gloriously large bubbles on the screen attract more attention than the comparatively feeble bubbles from a water-voltmeter standing on the lecture-room table. There are many fascinating lantern experiments, but for details the reader must refer to the various text-books on the subject.

To return to the lantern. It has been mentioned that one of its parts is the illuminant. In buying a lantern the decision as to what illuminant shall be employed will probably require considerable thought and courage; for whilst it is true that the illuminant modifies the design of the lantern as a whole, it is also true that the design follows naturally from the illuminant.

The table given below shows the comparative power of illuminants from tests made by Mr. W. J. Coles:—

	Standard Candle Power.
The Stocks-Wrench Patent Paraffin Oil Lamp	130
Incandescent Gas Burner, with reflector	75
2-burner Acetylene Jet	128
3-burner ditto ditto	188
4-burner ditto ditto	254
The "Sol" Lamp	72

	Standard Candle Power.
Electric Projecting Lamp for Nernst Filaments	59 to 168
(according to the voltage and the current consumed).	
Ordinary Blow-through Jet	400
Ejector Blow-through Jet	513
Ordinary Mixed Gas Jet	550
Best Mixed Gas Jet	750
Collimator Jet	1140
Special High-power Ejector Jet	1150
Arc Lamps	1000 to 2000
(according to the voltage and the current consumed.)	

The proverb that "ignorance is bliss" is very applicable to illuminants. A class which has been used to the limelight will probably always feel dissatisfied with anything inferior; but at a country school the oil-lamp (costing about 28s.), or even the incandescent gas-burner (9s.), would probably be appreciated by the scholars.

There is an attraction in the employment of acetylene gas, and it is a pleasure to know that one can have all the necessary apparatus (gas manufactory included) in a small space. The initial cost for a satisfactory generator and a three-burner jet is under £2 10s. The working expenses are negligible. A careful demonstrator can easily avoid objectionable odours by emptying the generator after use in a receptacle provided with a powerful flush.

The limelight is used frequently at schools. As everyone knows, the light is produced by a sort of blow-pipe flame impinging on a cylinder of lime. The combustible is generally ordinary gas; the aid to combustion is oxygen, driven into the blow-pipe under compression. There are two kinds of jet in common use, the blow-through jet and the mixed jet.

In the case of the former, gas is obtained from an ordinary nozzle (though a special fixture is preferable), and the oxygen is generally drawn from a strong steel cylinder. Unless the cylinder is provided with a regulator minor accidents are sure to occur, and a regulator should certainly be obtained with the cylinder. A gauge which gives the quantity of oxygen in the cylinder is a great boon. It is a good plan to have two cylinders, one of 20 or more cubic feet capacity, and the other of small, say 6 feet capacity, to act as a reserve, and to avoid a waste of the last few feet in the large cylinder. About £4 should cover all the expenses incidental to the blow-through jet.

The mixed jet employs both gas and oxygen under pressure, and requires a duplication of cylinders, the cost being thus increased by about £3. There are two advantages of the mixed jet; it gives a more powerful light than the blow-through, and it is independent of gas brackets. It is a great improvement on the blow-through when the lantern has to be used in various rooms.

Undoubtedly the most convenient source of light is electricity, and the most powerful illuminant is the arc-lamp. A good arc-lamp, carrying up to 25 ampères, can be obtained for from £3 to £5. One obtainable from Mr. Sharland, of Thavies Inn, E.C., is illustrated (Fig. 2); it costs £4 14s. 6d.

A perhaps sentimental objection to the arc is that it only uses a potential difference of 40 volts, whilst most currents are supplied at 100 or more volts; a big fraction of the energy must therefore be wasted, and, moreover, a rheostat resistance must be bought to effect this waste.

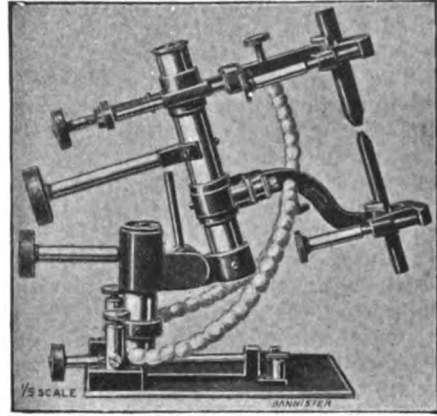


FIG. 2.

A Rheostat obtainable from Mr. Sharland for £2 10s., suitable for a potential difference of 120 volts, and taking a current up to 20 ampères, is shown in Fig. 3.* Before purchasing a Rheostat the buyer should determine whether he wants it to be fixed permanently in a room, or to be capable

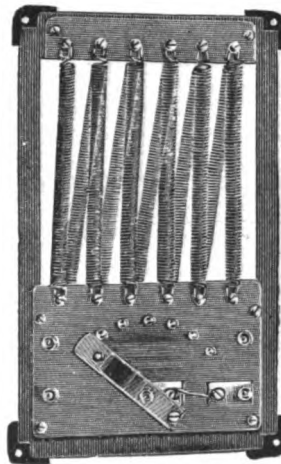


FIG. 3

of carriage from place to place. A Rheostat for any voltage up to 250 volts will probably cost something over £3.

As every lanternist is aware, there is a proper position for the illuminant, and one great advantage of the arc is that the source of light is small, and that therefore the greater portion of the illuminating surface can be put just where it is most serviceable. But the carbons burn away—sometimes irregularly; and for comfort the lecturer should have an assistant to keep the arc in the right spot, and thus to keep the illumination of

the screen uniform and steady. Moreover, if the space between the carbons is too small, an irritating, hissing noise is made. Self-regulating arc-lamps can be obtained, but all the writer has seen require occasional attention; some give forth disagreeable clicks, and the writer himself prefers the hand-regulated lamp.

Until quite recent years there were two types of lamp used for the production of light from the electric current—the arc and the incandescent lamp. The former, as already explained, gives a splendid light, but requires accessories and attention; the latter gives a comparatively feeble light, and is rarely used for lantern purposes. A few years ago the Nernst lamp appeared on the scene. This has an illuminating power intermediate between the incandescent and the arc, and, as its special features are not yet generally known, some space will be devoted to its consideration. An essential part of the Nernst lamp is the filament (or filaments), which contains certain oxides of metals (so-called "rare-earths"), non-conducting at ordinary temperatures, but good conductors of electricity when they are heated to 600°-800° C. The Nernst lamp used in streets and houses generally has a special heater, but in the lantern lamp, where more than one filament is used, and

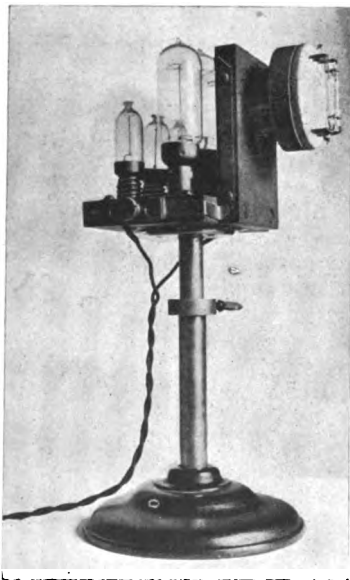


FIG. 4.

where space is precious, the filaments are heated by a spirit-flame. Fig. 4 shows a projector Nernst lamp supplied by the Electric Company, 122-124, Charing Cross Road, W.C.

In order that the diagram may be understood, it may be mentioned that the filaments show great sensitiveness towards variations of the voltage; these variations are obviated by means of a steadying resistance. There are three parallel filaments, and they are at the top right-hand corner of the figure. The bulbs which look like incandescent

lamps, on the left of the opaque diaphragm, are resistances. The cost of the Projector Lamp complete is £3 5s. A spare burner, *i.e.*, the porcelain support of the filaments, and the filaments, costs 8s. A single filament costs 1s. 6d.

A special endeavour to produce a good high-power electric projector has been made by Mr. R. W. Paul, of High Holborn. His lamp is shown in Figure 5.

THE LAMP COMPLETE.

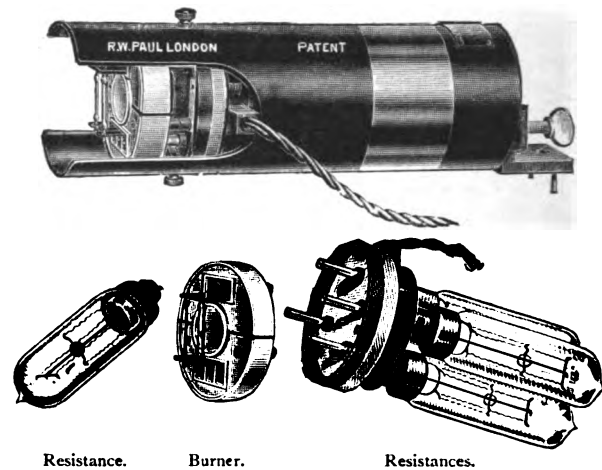


FIG. 5.

A great advantage of the Nernst over the arc is that no auxiliary Rheostat is required; a disadvantage is that a special burner is required for a given voltage. It is obvious that, if the lamp is used in the same building, as at school, one kind of burner will suffice. There are two ways of connecting up the Nernst, but only one is correct. There are two ways with the arc, but a mistake does not matter much here; the carbons simply give less light, the operator notices this and soon rectifies matters. If, however, the Nernst is connected the wrong way the filaments suffer. At a school there should be no difficulty in labelling the poles of the switches, + *ve* and - *ve*. This would reduce the danger of a mistake. Or the shapes of the connector and switch may be such that a wrong connection is impossible.

The procedure with the lamp is as follows:—First connect to the mains, then heat the filaments with a spirit-lamp; turn the burner to its proper position and carefully adjust; and leave the light on during the course of the lesson. The lamp certainly gives a much feebler light than the arc (Mr. Paul claims that his lantern gives an effect as good as a blow-through jet), but, in addition to the non-necessity of an auxiliary resistance, there is the advantage that when the burner is once (at the beginning of the lesson) placed in the right position, there is no further necessity for adjustment; moreover, there is no possibility of a hissing noise. No doubt there is a waste of current through the lamp being on continuously during a lesson; but it must be remembered that there is no considerable waste

through a resistance as in the case of the arc; and the cost of the electric supply only amounts to about twopence an hour. The Nernst Projector Lamp, as arranged by Mr. Paul, complete, with resistances, one burner with three filaments, and flexible cord for connection, costs £2 10s. Single filaments for replacing in the burner cost 2s. each. A spare resistance in bulb costs 2s. 6d. A spirit lamp costs 1s. 6d.; and a plug for connecting the flexible cord to a bayonet-socket costs 1s. 3d.

As already stated, the illuminant modifies the construction of the body of the lantern; and with the Nernst lamp a wonderfully compact lantern can be made. Mr. Paul makes a lantern costing, *without* lamp or objective, £4 5s. A case, 18×7×7 inches, costs an additional £1 5s. The weight of the case and the complete lantern is only 15 lbs.

The experienced lanternist will note that the source of light consists of three independent filaments at an appreciable distance apart, and will perhaps expect lack of uniformity in the illumination of the screen as a result. But up, at any rate, to a distance between lantern and screen of forty feet, the illumination is quite uniform.

A lantern for slides, and for horizontal and vertical projection, which should be serviceable for schools is shown in Fig. 6. Its cost, complete, is about £10.

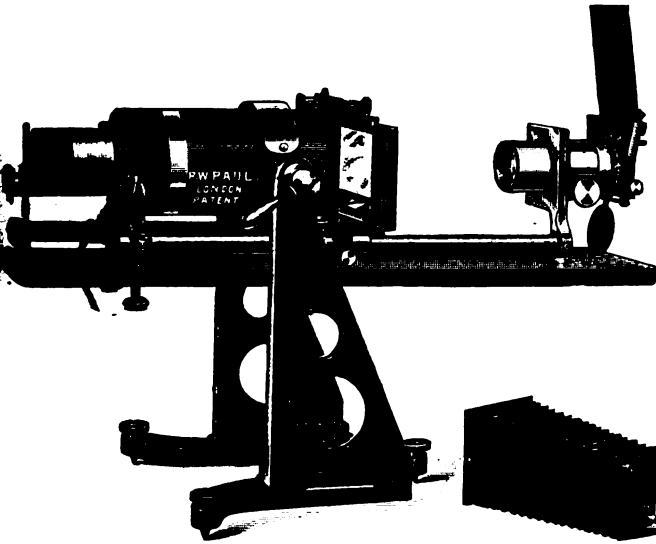


FIG. 6.

In the figure the lantern is shown as adapted for vertical projection; and the hinged mirror, at the top right-hand corner of the picture, is not in use. For horizontal projection the lantern is turned so that its axis is vertical; and if no other change were made an image would be formed in the ceiling; but the hinged mirror is turned into its proper position, making an angle of 45° with the horizontal, and thus the image is deflected on to the screen.

THE STUDY OF TENNYSON'S POEMS.

By LAURIE MAGNUS, M.A.

Author of "Words and their Use," "Introduction to Poetry," "A Primer of Wordsworth," &c.

(Continued from page 6.)

V.—Before the teacher goes on to develop the argument in the last section and tries to bring out of Tennyson, for the information of young readers, the moral meaning that his poetry contains, he should remind the pupil of Tennyson's literary greatness.

(i) POETRY IS FORM AS WELL AS MATTER.

It has not been amiss to begin with a consideration of the matter, for Tennyson's style is so supreme—the manner of his writing is so excellent—that sometimes critics of the poet have been liable to forget the value and dignity of the matter which it expresses. Fitting reference may here be made to some verses by Mr. T. Herbert Warren, President of Magdalen College, Oxford, in which this distinction is clearly drawn:—

As more and more a wiser sense divines
What in quick heats of youth
He deemed the form of beauty in your lines
To be the soul of truth.

Mention has been made of "the soul of truth," and we shall return to it. Just now we are concerned with "the form of beauty" in Tennyson's poetry. This is another reason why we should learn to know Tennyson. In life—in school life, especially—we do not use many words. We make shift with a limited vocabulary, and in school, or at home, in the playground, or at the dinner-table, there is not much variety in what we say. We may talk for several hours a day, but the words which we use are few. We say the same thing many times over; but when a man takes the trouble to write instead of speaking, it is—or it should be—because he has something to say which will be of permanent value. He ought to say something new, and useful, and beautiful, which is not to be found in the ordinary talk of everyday life. Accordingly, he will use a different language. One mark of the difference is that literature finishes its sentences. Most of the sentences in talk are broken and unfinished. The eye, the hand, the inflection of the voice, and, not least, the sympathy of the listener, do half our talking for us. They cannot do half our writing. Another mark of difference is that literature is never in a hurry. If a writer has something worth saying, he will have leisure to find words to say it well. He does not rush at his meaning, he does not hasten to express himself by any short cut of colloquial language or slang, but he searches for the right word, and selects his vocabulary with care. Literature has time: it can afford to exact its full measure from each word. It

can wait to bring out of its words all the meaning which is in them. That is to say, its words possess what is called "extension," "allusion," or "association." The thoughts which they express suggest certain other thoughts and ideas. The words stretch into the distance, enlarging the frontiers of expression, and creating a sense of power, and of almost unlimited dominion, within the sphere of abstract thought. They tune the reader's mind to the key which the writer wants to strike.

Purity and variety, accordingly, are two marks of literary language; and in poetry, especially, these qualities are valuable. They add a separate beauty to the beauties of thought. And this sense of poetic beauty becomes an art in itself, worth studying by itself. The poet's power is heightened by his command of beautiful expression. His poetry is greater in proportion to his mastery of language. This is obvious if we think of it for a moment. We have seen that poetry is concerned with the highest and most difficult subjects. Its function is to tell the truth about things which even imagination is hardly adequate to grasp. It does not talk about the weather and inquire into your father's health, as men do in ordinary speech. It is not even content with the somewhat higher range of the novelist, who aims at expressing the facts and experience of every-day life. No: conversation stops at the surface; fiction goes a little way below it; but poetry—immortal poetry—tries the highest flight of all. It never stops short till it interprets human experience by the unchanging laws of existence; it sweeps away the unessential details and lays bare the universal cause; it feels the heart-beats of destiny. More soberly stated, perhaps, poetry expresses a truth which some of us grope at, and others are content to let go, while most of us miss it altogether. Hence it follows that the language of poetry must be language at its height. For thought and language, remember, are not two things, but one. The language of poetry is not invented, like the language of diplomacy, to keep the poets a race apart. The so-called ornaments of poetry, properly speaking, are not ornaments at all. They are not introduced into language, as precious stones are set in silver, merely for show and effect. They are the only language fit to express poetic thought. The perfect poem consists of the thought and the language together. There is no poetry without language; there is no poet without words; a "mute, inglorious Milton" never exists and never existed. If all of us had the time, and took the trouble—still more, if all of us had the brain-power—to think freshly about the highest subjects, we should all express ourselves poetically. It is said that the dullest man writes poetically when he is in love. This simply means that in reflecting on his personal experience of one of the highest human capacities, his language rises with his thought. And, certainly, in our own experience, the more we train our minds in the loftier regions of thought—the fewer newspapers and periodicals which we read, and the more we

accustom ourselves to dwell on the great thoughts of good writers—the more eloquent we shall become, and the better we shall be able to move freely on the tablelands to which human nature can rise; and to which, therefore, we are bound to help ourselves to rise if we would make the most of the opportunities offered to us by life, instead of making shift in the few short years at our disposal with the things which are less excellent.

It is not suggested that the foregoing remarks on the connection between poetic language and poetic thought should be conveyed to the pupil as they stand. Here, as before, the teacher will use his discretion as to the pupil's degree of receptivity. But a reasonable attempt must be made to justify to the pupil's mind the use of so-called poetic diction, and Matthew Arnold's explanation of the heightened language of the Bible may fitly be quoted at this point: "If the object be one not fully to be grasped, and one to inspire emotion, the language of figure and feeling will satisfy us better about it, will cover more of what we seek to express, than the language of literal fact and science. The language of science about it will be *below* what we feel to be the truth."¹ The truth of the language of figure and feeling is higher than the truth of the language of literal fact. The teacher will judge for himself how far to discuss the view taken by Wordsworth in his "Preface" (1808). At this point, at any rate, he will do well to cite some examples of Tennyson's mastery of language.

(ii.) THE FORM OF BEAUTY IN TENNYSON.

There are degrees of art in language, and Tennyson reached a high degree. This is another good reason why Tennyson should be read by English boys and girls. It is easy to discover in him the larger vocabulary and the finer use of words which distinguish poetic expression from the language of common life.

- (1) An English home—gray twilight pour'd
On dewy pastures, dewy trees,
Softer than sleep—all things in order stored,
A haunt of ancient peace.
—*The Palace of Art*, xxii.
- (2) The island-valley of Avilion,
Where falls not hail, or rain, or any snow,
Nor ever wind blows loudly; but it lies
Deep-meadow'd, happy, fair with orchard-lawns
And bowery hollows crown'd with summer sea.
—*The Passing of Arthur*.
- (3) The lights begin to twinkle from the rocks:
The long day wanes; the slow moon climbs; the deep
Moans round with many voices.
—*Ulysses*.

Take these three passages—not more than twelve lines in all—from "The Palace of Art," "The Passing of Arthur," and "Ulysses" respectively. Let the pupil try to realise to himself in (1) the kind of picture which is drawn. It is not merely the description of an English country-house, of any country-house in England:

¹ "Literature and Dogma," chap. i.

it is a distillation of the spirit which pervades the English home, typically. The words universalise the thing seen; they idealise it and consecrate it; they render the very soul of English-home-ness, preserving unchangeably in our sight the essential facts and features of the type, selected out of countless instances. In (1) it is the expressiveness—the far-reaching meaning—of the words which should arrest his attention; in (2) it is the arrangement of the words. The effect of the Happy Island is produced by the choice and disposition of the symbols used to render the conception. The procession and array of natural phenomena—hail, rain, snow—which do *not* fall in Avilion, culminating in the statement that the very breath of the wind is soft, create a kind of cumulative effect which is heightened by the form of the expression. Let me try to put this more clearly. The joys of Avilion might have been stated in extravagant terms. Tennyson might have dwelt on all the lovelinesses and delights of that island of human yearning for which we all embark, but the shores of which few of us reach. Instead of this, he prefers the language of restraint and under-statement. He produces his effect—he expresses his meaning, that is to say—by enumerating one by one, without adornment or embellishment, the unkind aspects of nature from which Avilion is exempt: “where falls not hail, or rain, or any snow,” and where the forces of nature are ordered so happily and fairly that even the breeze is tempered to the luxurious convenience of mankind: “nor ever wind blows loudly.” And then comes the selection of the epithets, the character-study of the island in a few inimitable touches. It is “deep-meadowed,” and our senses are soothed by that vision of green, lush grass in the spacious valleys of the countryside, which is at once so restful and so refreshing; its “orchard-lawns and bowery hollows” — rich words of cultivated pleasaunces, the sound of which is as delightful as the picture which they represent—are “crowned with summer sea,” and at once the vision at the back of every Englishman’s mind, of a peaceful garden by the sea, is recreated for his enjoyment. In (3) the pupil should be led to consider another aspect of Tennyson’s language. If he watch the lighting up of scattered cottages at dusk, two qualities in the spectacle will strike him—the quickness and the triviality. The lamps are soon alight; the radiance which they shed is slight. The dark spaces are quickened with trivial flames. Now, take Tennyson’s line, “the lights begin to twinkle from the rocks,” and do not the short *i*-sounds (*beg*in, *tw*inkle) and the staccato *k*-sounds (*tw*inkle, *ro*cks) help to bring out the essential features of the thing seen? Then change the scene; instead of cottage-interiors, fix your gaze on the spectacle of vast nature seeking repose—the sun going down, the moon sailing up the sky, darkness brooding over the sea, which is heard but seen no longer. Instantly—magically, almost—Tennyson strikes a new note. His short, quick vowels and consonants are replaced by long *o*- and long *a*-sounds, and the drawn-out melancholy of *m*.

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His verse lingers musically on slow vowels and languid consonants: *day, wanes, slow, moon, moans, round, voices; day, wanes, moon, climbs, deep, moans, round, many*. Surely, in these passages, on which much more might be said, there is reason and to spare why Tennyson should be studied by all who care to know the resources of their own language—that language which is entrusted to us for wise use and enjoyment.

The teacher may here be referred to Stopford Brooke, “Tennyson,” Introduction, i.; Walter Raleigh, “Wordsworth,” chapters iii. and iv.; W. Macneile Dixon, “A Primer of Tennyson,” ch. vi.; and L. Magnus, “A Primer of Wordsworth,” ch. vi.

(To be continued.)

GIRLS' SCHOOLS IN SWEDEN.

By EDITH BALL.

IN Sweden the term “elementary” is given to schools which correspond to our “high” schools for girls and “grammar” schools for boys. What are called in this country “elementary” are known as “folk” schools in Sweden, while *hog skola*, easily recognised as “high school,” is a Swedish term synonymous with our university. There is at least one such elementary school in every Swedish town. Lidköping on Lake Venern, a town with a population of between 5,000 and 6,000, has one—large towns have more, according to the size.

Since the method of instruction and the standard are the same in all schools of similar grade, a pupil may change her school without any interference with her education. On hearing that a girl is in the VIth class, for example, it is possible to tell exactly how far up the educational ladder she has climbed. As a matter of fact, a change of school is seldom made, except in the case of parents moving from one town to another. All the pupils are day girls; no boarding houses are provided for girls coming from a distance, but arrangements are made for them to board with some family in the town, preferably where there are children attending the school. The practice of sending children to a boarding school has been unknown, indeed, in Sweden up to within the last few years. A boarding school has been established by private enterprise now, however, for boys in the district of Wärm-land, north of Lake Venern. As it is on “the English plan,” it seems likely to succeed, for anything English is much the fashion just now in Sweden.

The routine of a Swedish school for girls is easy to understand. Take, for example, that of Lidköping. The school meets every week-day at 8.15 a.m., prayers are read by the headmistress, after which the girls disperse to their several class-rooms. Each lesson lasts about forty-five minutes, and each class takes all the lessons in its own room. An interval of ten minutes is allowed between each

lesson for recreation for the pupil and ventilation for the room. This interval must be spent by every girl out of doors provided the weather is fine. A few of the younger girls play and enjoy themselves, especially when the snow is on the ground—as it is in all but the most southern towns for the greater part of the school year. The elder girls spend the recesses in walking in twos and threes. At 10.15 a.m., the end of the second lesson, half the girls go into the gymnasium for forty minutes, the others go home to breakfast. The school reassembles at 12 o'clock and work is continued till 2.30, during which time three more lessons, making up a total of five each day, are given. At the close of the school each mistress says the dismissal prayer for her class, except on Saturdays, when the school reassembles as at the beginning of the morning, and the head-mistress reads a longer form of prayer, sometimes adding a little homily.

The youngest children do not assemble till 10.30 and are dismissed at 1.30.

It will have been remarked that each girl takes gymnastics three times a week, and that her breakfast time on those days is curtailed. The question has been raised as to whether it is good for growing girls to do two hours' work—and more on the days for gymnastics—on a cup of coffee or chocolate, with the possible addition of a biscuit, which is all that is obtainable at 8 a.m. in most Swedish houses. There seems, however, to be no other way of arranging the school hours to suit the varying domestic arrangements of Swedish families.

No registers are called, for this practice is considered a waste of time; but each class has two monitors, and one of their duties is to report any absentee to the class mistress.

On receiving anything from a mistress or handing anything to her a girl always makes her curtsey. Sweden will soon lose her reputation for being "a bowing and curtseying country," for that mark of respect for elders is fast being "laid away," as they say, but within the school walls it still survives.

The class-rooms are furnished in much the same manner as those in this country. The chair and desk of each mistress are raised on a platform. A centigrade thermometer is to be found in every room. School authorities would indeed as soon think of being without a clock as without a thermometer, and they consult one as often as the other.

No provision is made for instrumental music. Such lessons are given by some independent music-teacher, and with the large amount of home preparation the girls have it is a wonder that they can find time to promenade in the afternoons to the extent they do.

Holy Scripture is, as a rule, only taken once a week.

Particular attention is paid to the teaching of modern languages, the mastery of one or more foreign tongues being so essential to the average Swede. As a rule, girls start with French. After working a year or two at French they begin

German, and in their fourth year English is added. The girls are then studying three languages at once. In some schools English is taken before German. It is worthy of remark that the system of explaining everything in English or in French, as the case may be, and allowing no Swedish word to be spoken during a language lesson, has now become almost universal. But it must be noted that with the beginners this system causes great waste of time, even if with the more advanced classes it works well. Science also receives great attention; the teaching of botany is particularly thorough.

The school year is divided into two terms: one from the beginning of September to Christmas, and the other from the third week in January till the first week in June, with a few days' holiday at Easter. The summer holiday is of three months' duration. Such a vacation gives the teachers a good opportunity of securing a thorough change of scene and of pursuing their studies abroad. Many teachers of modern languages spend this holiday in France, in Germany, or in England. Some are lucky enough to receive grants from the educational authorities towards the expenses of their summer tour, and one teacher from Gothenburg was not so long since given a year's leave of absence, *plus* a grant of money, to enable her to continue her study of French and improve her knowledge of English. It is only in the largest schools that native teachers are found, and it is essential for Swedish teachers of French or English to have a good French or English accent, which can only be acquired by visiting those countries.

There has been recently some discussion in the Swedish Parliament about the length of the summer holidays. Some authorities maintain that the undeniable benefit to the teacher of three months' rest is not shared by the taught. This party is anxious to adopt what has been termed the "English" system. In passing it may be remarked that, if the Swedes have a fault, it lies in their readiness to consider that the adoption of anything "English" must be an improvement.

Every person in Sweden who can possibly afford it has a dwelling by the sea or by a lake to which to migrate in summer, and so long as this custom prevails so long will the summer holiday for the schools extend to their present length. In Norway, where this system of going away for the whole summer is less universal, the holiday is shorter.

In the Swedish schools the only holidays during term time (besides Sundays) are the first Mondays in every month, unless some special holy day, such as Ascension or Lady-day, should fall in that month, when the Monday leave is held over until that day instead.

Such games as hockey and tennis are unknown, and there is not the same "school enthusiasm" as with girls in English schools. Parents and friends are welcome to the school at any time, and they often come in and listen to the lessons.

The work of the teachers is divided in much the same way as in our schools. History and literature with one or more modern languages, together

with Swedish grammar, are subjects for which one teacher may be responsible. Another may take mathematics and science. The time-table is so planned that each mistress secures one free hour nearly every morning, when she is at liberty to do what she pleases. As a general rule, this hour is utilised in preparatory work or in the correction of exercises. It seems that the teachers are employed to give so many hours' instruction per week, and so long as that instruction is given efficiently the teachers are perfectly independent of the school in "off" hours. As in England, so in Sweden, preparations and corrections absorb much of this so-called "free" time.

At the end of the school year there is a public examination, chiefly oral, in which all relatives and friends are keenly interested. Unless a girl is exceptionally clever, she only gets "moved up" once a year. At sixteen years of age all boys and girls are confirmed, after which the majority leave school and enter on their life's work. Those girls who are desirous of proceeding with their studies do so at some one of the universities.

It may be said that in Sweden the education of children in a small provincial town can be secured more efficiently and at less cost to the parent than in an average town of the same size in England, and this is owing to the fact that in Sweden there seems to be little class prejudice.

SIX GREAT SCHOOLMASTERS.¹

IT is always pleasant to read about schools and schoolmasters. Perhaps we are reminded of our own young days, and, on the principle *suave mari magno*, rejoice to think that we are not now, as we were then, subject to a tyrant's rod. Perhaps the influence is more sentimental, even regretful, as we contrast the high hopes and merry hearts of youth with life's disillusionment. Or it is the oddity of school custom, or the whims and idiosyncrasies of the schoolmaster, whose character in his position of despot is sure to reveal itself more than is usual with men. So we have read this book with pleasure, and so also will all those who take it up, we venture to prophesy. Yet the writer is no artist in words. His style is naught, his literary equipment meagre. His aim was to be to show that, great as man may be, he is still a fool. Nor is his judgment infallible: Moberly should hardly be classed with Kennedy and Temple. And why is Dr. Abbott, perhaps as great as any of these in some respects, omitted? But the book is capital reading. We may skip if we will the biographical details (especially if they go back, as in Hawtrey's case, to the great-great-great-grandfather, born in 1600). We may not be quite clear as to the professional claims of this or that to be called a great

schoolmaster, but the anecdotes that make a man live abound, and there is, as we have said, always plenty of interest in anything which has to do with schools.

Of these six, Temple and Kennedy are the most impressive figures: Temple by sheer force of character, Kennedy by his amazing power to create scholars. There is something also in both of them which shows warm humanity. Temple, for all his rugged exterior, had a very soft heart, and the picture of him standing with his old mother in his Rugby garden is most touching. Anecdotes about Temple—the "just beast" and all the rest—are mostly well known; but less is commonly known about Kennedy, and Mr. How is very good in the chapter which deals with him. We will not tell our readers how a boy made him an April fool, and how the headmaster paid him in his own coin; but it is one of the best school stories we have heard for a long time. His temper and blusterings are an astonishing mark of his character, and the wonder is that, in spite of them, he was so great a schoolmaster. The numbers at Shrewsbury steadily declined under his rule, and he left it with little more than half the number which he found there; yet Shrewsbury was unique in its scholastic achievements. Parents, governing bodies, and local authorities, may take note of this, and see the value of their universal test of a school's merit. After these two perhaps Vaughan is the most remarkable of the remainder. He is certainly remarkable for iron strength under a most velvety and soft outside. But he offers less material for anecdote.

On the whole, this book serves to remind us how much English education has been the work of individual character. With little or no organisation, no reasoned plan of teaching, and many abuses, yet the force of those who guided it has made it a great instrument for good in the past. But the day of great men seems to have passed by. For one reason or another, most of our present generation of schoolmasters are commonplace. Perhaps it is but the lull before a new movement; and possibly the appointment of lay headmasters now just beginning, which gives Mr. How so much alarm, may begin an era of intellectual reform comparable to the moral reform effected by Arnold.

THE annual meeting of the Association of University Women Teachers was held on January 12th. In her opening address, Miss Maitland, who presided, spoke of the new Education Act as having had the effect of increasing the demand for university women as teachers. The new education authorities are showing a laudable tendency to offer adequate salaries to women teachers who possess a university degree or its equivalent. The report for the past year shows an increase both in membership and the work done by the association. There are 1,368 ordinary members, and the applications received for teachers, as well as the appointments made, were greatly in excess of the numbers quoted in the report of the preceding year. Many applications for teachers have come from several Directors of Education, and in some cases this direct application has been the means of raising the scale of salaries originally contemplated. Miss Clough, of Newnham College, Cambridge, has been elected president of the association for the year 1905.

¹ "Six Great Schoolmasters: Hawtrey, Moberly, Kennedy, Vaughan, Temple, Bradley." By F. D. How. With thirteen illustrations. xvi. + 72 pp. (Methuen.) 7s. 6d.

THE CAMBRIDGE NATURAL HISTORY.¹

THE present volume of this now well-known work has been delayed in the press by circumstances which are explained in the preface. Mr. Boulenger's classification of the Teleostean fishes was ready for publication in 1902, while Prof. Herdman's account of the Ascidians was completed even earlier. Throughout the book the high standard that previous volumes have led us to expect is well maintained. The animals dealt with in the earlier chapters are probably unknown to the general public, in spite of the fact that many of them may be found upon the rocks and seaweeds exposed at low tide round our own coasts. Nevertheless, these lowly types of vertebrates are among the most interesting, since they form to some extent links connecting the higher Craniate animals with the invertebrates. They are, therefore, especially attractive to the students of evolution, and afford some of the instances of degeneration; in fact, were it not for our knowledge of their development, we should probably continue to class them among the invertebrates, as did our zoological forefathers.

We are glad to note that Prof. Herdman, after submitting to *Branchiostoma lanceolatum* as the severely correct name of the Lancelet, has the good sense to return to the title *Amphioxus*, by which this animal is known to scores of students who have passed through the zoological laboratories. To insist upon the rigid application of the rule of priority and pay no heed to universal usage and custom is mere wanton pedantry and the cause of much bewilderment.

Specialists in zoology will turn with eagerness to Mr. Boulenger's systematic account of the Teleostei, which comprises no less than about 11,500 species out of the total 12,000 species of existing fishes known to science. Whether the classification here proposed prove right in all its details or not, it is undoubtedly a step in the right direction to take as the basis of arrangement the structure of the skeleton and of the other organs. The classification of Günther, which has been in general use in this country for the last thirty years, and was, to a large extent, based on physiological principles, must certainly be abandoned in favour of this genuine attempt to express the phylogeny of the order.

It is a most satisfactory sign of the change that is taking place in zoological teaching to find that the natural history of their subject is not overlooked by any of the authors. The pages dealing with the breeding habits of fish are of extraordinary interest, and full of valuable information alike to the sportsman and to those who occupy their business in great waters.

The book is copiously and admirably illustrated, and furnished with a number of maps showing the distribution of various families of freshwater fishes

—a subject that opens up wide fields of discussion upon the arrangements of continents and oceans in past times.

We must make one protest. The terms "diphycercal," "heterocercal," &c., should not be applied to the tails of fishes, but to the fishes themselves. No one would venture to speak of a "pentodactyle finger" or a "hexapodous foot," yet the error would be of exactly the same character.

Both authors and editors are to be warmly congratulated upon the valuable addition to zoological literature, and we trust that we may soon see the whole work completed by the appearance of the remaining schemes.

STUDIES IN VIRGIL.¹

MR. GLOVER in this book makes an attempt to realize Virgil for English readers. The book is founded on lectures delivered by him as Professor in Canada, and although the chapters of the book were not delivered as lectures, but written later, they bear traces of their origin. The book is, in fact, a popularising of Virgil. It covers in part much the same ground as Sellar's excellent work, which is superior to it in style and treatment; but it is by no means a repetition. Mr. Glover has made his own study from his own point of view, and his work is better calculated to appeal to the audience which he has in his eye. There is also a personal note of affection, and even enthusiasm, which will certainly touch all those who are capable of those emotions.

Mr. Glover's examination of Virgil's indebtedness to his predecessors brings out nothing new, but is well and clearly set forth. He lays stress on Virgil's complexity and pathos as contrasted with Homer, and finds no classical parallel to the "Æneid" but the "Troades" of Euripides, whose character has much in common with Virgil. With good sense Mr. Glover ridicules the recondite mythological allusions of Virgil's contemporaries, riddles in fact, or to use Wilamowitz's word, *Professorenpoesie*; and shows how Virgil was at first tainted with the vice, but afterwards threw it off.

He takes the various parts and episodes of the poem, summarises and criticises each, examining its relation to the whole, and its source. Virgil's chief characters are discussed with reference to life. Dido, the mature woman, the royal queen, loving with passionate abandonment, is a truly human figure, and her story (as Mr. Glover points out) needs no help of Venus and Cupid. The contrast of Dido, following her overmastering impulse against her ideal, and her commonplace sister Anna, is well brought out. We do not like Mr. Glover's style, which is undignified; but we thank him for his clear analysis of this episode. Æneas as a character remains obscure. Virgil cannot fully have realised his hero; or perhaps it was a

¹ "The Cambridge Natural History." Vol. VII. Hemichordata, by S. F. Harmer; Ascidians and Amphioxus, by W. A. Herdman; Fishes, by T. W. Bridge; Fishes (Systematic Account of Teleostei), by G. A. Boulenger. (Macmillan.) 17s. net.

¹ "Studies in Virgil." By T. R. Glover. xiii. + 312 pp. (Edward Arnold.) 10s. 6d. net.

lack of dramatic skill in the expression. In the episode of Dido he is clearly doing wrong without any real necessity, for the divine mission is always vague with him: therefore his figure loses in grandeur, and Æneas becomes less fit to become the founder of Rome.

We cannot linger over the other sections of the book—Hades and Olympus, and the greater moral questions which were in Virgil's mind. His melancholy and meditative spirit must have brooded long over these, gathering wisdom with time. Perhaps it was so, that when on his death-bed he desired the "Æneid" to be burnt, the reason was, not that he had left a few lines metrically incomplete, but that he felt his knowledge of life and his insight into life's greater issues had been too small to have done his work properly. If he had lived, would he have burnt the poem himself, and written a nobler "Æneid?" He was only forty-nine.

THE CONQUEST OF GAUL.¹

MORITURI *te salutamus!* Prof. Freeman dying left the history of the fifth century incomplete. His papers were entrusted to his successor at Oxford, Prof. York Powell, who, too, died before the task could be completed; and now Mr. T. Scott Holmes gives us what is possible.

To the average Englishman, it is generally a hard problem to name even two events of the first millennium of Christian history which lie outside the New Testament and the British Isles. How abstruse will this volume appear to him! He may "know" indeed that the Roman Empire came to an end (which it did not), and that Teutonic tribes invaded Western Europe, making a new world therein, instead of the Imperial sway. But with what strange feelings will he read in this twice-posthumous volume of other Constantines and Theodorics, than the persons more or less vaguely heard of as emperors and Gothic kings in Italy! Yet Prof. Freeman enters into the history of the first half of the fifth century, especially that part which may be called the "conquest" of Gaul, with the express purpose of understanding our own island story.

Students of history are familiar with his old insistence on the fact that Englishmen are Englishmen, and not Romanised Teutons. Recent years have seen the triumph of this truth as against a rival school of history; and here once more we have, only now in detail, the full significance set forth of the light in which Gaulish history is clear as contrasted with the darkness of the events whereby Britannia disappeared and England rose in its place. To those who will have patience to read through these pages, with their strange names

and, we must confess, their frequent allusions to what was familiar to Prof. Freeman, but which scarce any other Englishman even knows, will come home the significance of a certain Constantine's marching from Britain to Gaul with all the Roman soldiers, and his rising to acknowledged emperorship in south-eastern Gaul, the consequent independence of Britons in their island, preparing to fight against the Saxons who were already harrying both sides of the (not yet English) Channel, and the contrast between the overthrow of Roman government in Gaul and the exterminating warfare between Saxon and Briton in these islands. Incidentally, traditional dates will be modified, traditional ideas of Goth and Roman will be revolutionised, and one part of the Wandering of the Nations will be understood in detail.

It is not a book for our pupils, but for the teachers it should serve as a stimulus to read such works as Hodgkin's "Italy and her Invaders," or at least such manuals of European history as will help them to understand those centuries when men and battles decided, as it were in a day, the future destinies of Europe and of Christendom.

We have also received another volume edited by Mr. Scott Holmes containing fragments of lectures delivered by Prof. Freeman, at Oxford, on the eighth and immediately following centuries. Scholars will welcome these last gatherings from the harvest which Prof. Freeman reaped from the beginnings of the Middle Ages. There seem to be some sentences—*e.g.*, at the top of page 27—which would have been better for the master's revision, but we must be thankful for what we have. It abounds in the wealth of quotation, of comment, and of appendix, which we have been accustomed to associate with the work of the author of the "Norman Conquest."

THE JANUARY EDUCATIONAL CONFERENCES.

It has become the custom for educational authorities throughout the country—both those engaged in teaching and those concerned with administration—to meet annually in January for the discussion of current problems in education. These meetings of educationists have become too numerous to make it possible here to provide a detailed report of all of them, and, in accordance with previous practice, a summary only of the discussions of methods of teaching and other subjects directly affecting the work of the teacher is attempted. In addition some comments on points of special importance are included in the month's "Items of Interest."

LEAVING CERTIFICATES.

The recent recommendations of the Consultative Committee to the Board of Education on the subject of school certificates have given rise to much discussion, and it was not surprising that the kindred question of leaving certificates should have been given great prominence at the meeting of the North of England Education Conference in Liverpool. At the opening meeting of this conference, under the presidency of Lord Stanley of Alderley, a debate on leaving certificates was opened

¹"Western Europe in the Fifth Century." By E. A. Freeman. vi. + 326 pp. (Macmillan.) 10s. net.

²"Western Europe in the Eighth Century and onward." By E. A. Freeman. viii. + 470 pp. (Macmillan.) 10s. net.

with papers by Mr. G. W. Alexander, clerk to the Glasgow School Board, by Mr. Owen Owen, chief inspector for the Central Welsh Board, and by the Rev. J. B. Lancelot, of Liverpool College. Mr. Alexander gave a brief history of the Scottish leaving certificate. A large number of examining bodies, he said, have accepted the certificate as exempting from preliminary examinations. The scheme has done much to improve the curricula and raise the standard of secondary schools, and the leaving certificate is now the one examination to which all but a few of the schools confine themselves.

Mr. Owen thinks that if a system of secondary education with organised courses of instruction leading up to a certificate examination is to be established successfully, it is important to secure uniformity of standard in the matter of admission to secondary schools. He believes that the establishment of a complete system of inspection and examination ought to precede the establishment of certificates. In any system that is adopted it will be important to secure uniformity of standard not only within a given province, but also, as far as practicable, in the country as a whole. Mr. Lancelot said every working schoolmaster will sympathise with the aim of the Consultative Committee of the Board of Education, which is to diminish the multiplicity of examinations and to provide a test of adequate general education which may be widely accepted. Teachers will also give a general approval to their methods, though there is plenty of room for criticism in matters of detail.

In the subsequent discussion, Lord Stanley of Alderley remarked that any method of recognising the work of the secondary school must recognise as of equal value work whether done on the modern side or the classical side. Ample consideration of the regulations under the new Act must be ensured before starting organisation. If an over-hastily organised scheme with reference to the administration of secondary schools is adopted, there is a danger of doing something now of which we may repent in a few years, which, indeed, we may not be able to undo.

Sir Oliver Lodge, Mr. J. L. Paton, and Miss Burstall also took part in the discussion.

The question of school-leaving certificates was also discussed at the meeting of the Public School Science Masters' Association, the discussion being opened by a paper by Mr. C. J. Gardner, of Cheltenham. The Incorporated Association of Assistant-mistresses also considered the question and passed resolutions embodying their views.

SCHOLARSHIPS.

The value of scholarships and the method of awarding them were discussed at the North of England Conference in Liverpool, and also at the annual conference of the National Federation of Head Teachers' Associations held this year at Cambridge. The Liverpool discussion, over which Sir William Anson presided, was introduced by papers by Miss Burstall, of the Manchester High School for Girls, and by Dr. T. J. Macnamara, M.P.

Miss Burstall, after explaining the existing need for a wise scholarship system, discussed at length administrative details and the various classes of scholarships. During the course of her remarks she said that in her own experience she has found abler children, and many at least as needy, coming from private schools and private tuition as from the public elementary schools. If we want to get hold of the clever children, continued Miss Burstall, we must cast our net everywhere.

Dr. Macnamara seems to be largely in agreement with many of the views set forth by Dr. R. P. Scott in these columns in March last. He would have scholarships awarded not as the result of a competitive examination, but by the managers and teachers. Dr. Macnamara had something to say, also, on the

future of the scholarship winner—a side of the question which is ignored too frequently; working-classes' children who secure scholarships, he thinks, should be helped to become high-grade engineering, electrical, industrial, and commercial workers. If their scholarships simply extend their purely literary training, and send them out into the world to swell the great army of clerks, they will probably have good reason to lament the day they ever won them.

In the speeches which followed the readings of the papers, Councillor J. W. Alsop, vice-chairman of the Liverpool Education Committee, said a scheme of scholarships has been in operation in Liverpool for the past thirty years. Through local patriotism and the generosity of private citizens a sum of £20,000 was raised thirty years ago, and this has been supplemented by educational endowments and by the aid of the technical instruction moneys. The result of the scheme has been that out of 415 ex-scholars who have enjoyed these scholarships, fifty-five afterwards obtained university degrees, including one Senior Wrangler and one Second Wrangler. Another result has been that the teaching profession has been reinforced by about one-third of those scholars, although no condition that they would be required to enter the teaching profession had been prescribed.

Sir William Anson, in summing up the discussion, said if the metaphor of the educational "ladder" means that the whole purpose of education is advancement in life, to move out of one class or school into another and higher, and that the whole object of education is to serve personal advancement and ambition, that is a view he will contest and repudiate always. The definition of the purpose of scholarships which represents that they are for the benefit of the community, to sift the various types of ability among the young, and to secure to the community that every child develops its abilities to the best advantage, is the correct one, and that which stands for the true purpose of the scholarship system.

A paper by Prof. Michael Sadler on scholarships was read at the conference of the National Federation of Head Teachers' Associations. He urged that in building up a complete scholarship system in a locality the need for the following kinds of scholarships must be borne in mind:—(1) Minor scholarships tenable at secondary schools from 12 to 16 years of age, with power of extension to 18 or 19 in cases of exceptional merit and in appropriate schools; (2) major scholarships carrying on boys and girls of special promise from the secondary schools to universities or other places of general or technical education; (3) evening class scholarships to carry on students from the ordinary evening continuation schools to higher evening centres; (4) scholarships for art students carrying on pupils from the elementary drawing classes to the higher classes in the locality, and in cases of exceptional promise from the local school of art to schools or studios elsewhere in Great Britain and abroad; and (5) a miscellaneous group of scholarships tenable at day courses at places of technical or professional instruction, including schools of domestic economy.

THE TEACHING OF ARITHMETIC.

At the conference of teachers from elementary and secondary schools and technical institutes, held under the auspices of the London County Council, the subject of discussion for the first session was the teaching of arithmetic. Papers were read by Mr. C. T. Millis, principal of the Borough Polytechnic, and by Mr. S. O. Andrew, of the Whitgift School, Croydon. Mr. Millis thinks that what is needed in the teaching of arithmetic is that some of the time now spent in teaching special rules in money sums shall be devoted to the inculcation of a sound knowledge of general principles, decimals, and proportion. The teaching of commercial money rules ought to be deferred, he says, to a

much later age, and then only to those pupils who are already, or are about to be, employed in work of a clerical character, when such money rules become technical, and are the applications of the general principles of arithmetic in the same way that estimating and taking out quantities for building, engineering, and other trade work are the applications of arithmetic for pupils going into or engaged in various trades. These remarks apply with equal force to girls as to boys, especially to those girls who are likely to be trained for dressmaking, upholstery, and other trades, for all of which a knowledge of geometry and arithmetic on better lines will be necessary. The same system that will develop powers of observation and teach accuracy of measurement and weighing to boys is equally needed for girls, and will do much to remove the difficulties experienced by those who are paying attention to the training of girls for industrial and other work.

Mr. Andrew is sufficiently heretical to look forward to a time when arithmetic will be banished from the examination-room altogether, and a boy's knowledge of the subject will be tested by his ability to use the operations of arithmetic for the purposes of science, geometry, and higher mathematics. But whatever part of arithmetic may be given up or postponed, there is, says Mr. Andrew, a general agreement that it must still include a knowledge of the standards of measurement necessary for the investigation of physical phenomena.

THE TEACHING OF GEOGRAPHY.

Methods of geographical instruction were discussed at the Liverpool conference and at the annual meeting of the Geographical Association. Mr. Mackinder, in addressing the North of England teachers, said the aim of geographical teaching is to produce an intelligent people with imaginative leaders. In view of the increasing competition between nations and the increasing strain upon the social machinery, we must have clearly before us what he called the political aim in the largest sense. In teaching geography a beginning must be made not with definitions, but with realities. An image should never be employed when the thing itself can be seen, and nameless maps, in which the geographer revels, ought to be adopted.

At the meeting of the Geographical Association over which Mr. Douglas Freshfield presided, a discussion on practical geography in schools took place. Prof. Dryer, of Indiana, in opening the discussion, described American methods of teaching the subject. He explained that in the schools of the United States practical geography is largely taught by laboratory methods, though practical work of this kind is supplemented by field exercises and graphical problems. During the course of the debate Mr. B. B. Dickinson described an experiment he is instituting at Rugby School, in taking the boys of his class over the ground covered by a sheet of the ordnance map, requiring them to trace the course of the watershed, observe the contours, and study the physical features of the district in connection with the census tables.

ART TEACHING.

The second of the three days occupied by the London County Council's conference of teachers was devoted to a consideration of methods of art teaching. The first session was presided over by Baron Suyematsu, lately Minister of the Interior in Japan, who in his opening remarks said that Japan still finds great difficulty in solving the problem of how art shall be taught in elementary schools. Mr. E. F. Strange, of the National Art Library, Victoria and Albert Museum, read a paper on Art Teaching in Japan. He said that drawing, not necessarily art, is an essential subject of the Japanese code of education, and it is taught in all State schools. Education in Japan is no new thing; the old civilisation of that country made ample provision for it, but on the old lines, the foundations of which were the Japanese and

Chinese classics. No better evidence of the reality of the training thus acquired by the Japanese of the better class can be given than their intense national appreciation of the arts of fine calligraphy and of literature. Art in Japan has not the importance which certain hasty generalisations lead one to expect. In the ordinary primary schools drawing may be taught, but it is not compulsory. In the higher primary, secondary, and normal schools it becomes part of the regular course; but the time allotted to it does not, as a rule, exceed two hours per week. Such as it is, the instruction is given without any definite aim or policy, and is not due to the spontaneous desire of an art-loving race, but to mere imitation of the European method of education. At the present time, the teaching varies very much in efficiency, and, except in a small number of cases, is not of a very satisfactory character.

At the afternoon meeting, Mr. R. Catterson-Smith delivered an address on "The Influence on Handicraft of Art Teaching in Elementary and Secondary Schools," which was followed by a paper on "The Art Training of the Artisan," by Mr. John Williams.

FROEBEL'S PRINCIPLES.

The whole of the concluding day of the London conference was given to the consideration of Froebel's principles. In an address on true and false applications of Froebel's principles, with special reference to the teaching in infant schools, Miss E. R. Murray, of the Maria Grey Training College, said Froebel sought to satisfy and to use the boundless interest, energy, and activity of younger children. There is no need there to create interest, but, as Sir Oliver Lodge emphasised lately, there is great danger lest by starving this early interest we commit the crime of turning intelligent children into dull and satiated professional school-boys and school-girls. It is time to reject the idea that children never like what is good for them. It is because Froebel endeavoured to choose for children such occupations as are suited to each successive stage of bodily and mental development, so that they enjoy work, that he is supposed to have turned work into play. It is eighty years since Froebel wrote: "Play is not trivial; it is of deep significance. Cultivate and foster it, oh Mother! protect and guard it, oh Father!" Those who watch children are constantly struck with the strenuousness of their play. It is this strenuous quality of play which excited Froebel's admiration. Froebel's aim in education was in the end identical with that of Prof. Laurie, "The realisation of the ideal of man by each individual in and for himself."

Mrs. Kirk, of Bradford, spoke on the same subject, and a paper was contributed by Mr. J. H. Badley, of Bedales School, Petersfield, on true and false applications of Froebel's principles, with special reference to the teaching of children over seven years of age.

THE TEACHING OF CLASSICS.

The Lord Chancellor, in his presidential address to the Classical Association of England and Wales, referred to methods of classical teaching. During his remarks he said: "Few books are more amusing to a boy than Herodotus, and assembled Greece loved him, though he was provincial enough in manner and dialect. What would be said of an effort to teach a man a good English style, if he was never allowed to read anything but Bolingbroke or Addison? I know it will be said that in teaching you must have regard to accurate scholarship; and no one will undervalue accurate scholarship. But the question is, not what will be ultimately reached, but what in the order of events is the best way to attain to that accuracy. Children, if they were not allowed to speak except upon strict grammatical rules, would be a long time in learning to talk their own lan-

guage; and I suppose it is the experience of most people in learning a foreign language that if they confine their reading to what would be called lessons for children their progress is slow. In truth, what I have quoted before is true here—by mistakes we learn; and a wider study of the Greek of a thousand years and more, I think, would excite a more real interest and create a more numerous body of students who would read Greek writers, not merely for an examination, but for the enjoyment derived from the reading itself. It is astonishing sometimes, when one speaks to those who have left their classics behind them, to note how narrow has been the curriculum, how sparse and scanty has been the dip into a language which nevertheless has such abundant and copious sources of interest. How many of such students have ever opened a book of Diodorus Siculus or Dion Cassius, or in the Greek of Plutarch, and even of Plutarch either in Greek or English, anything but the Lives in Langhorne's translations, or a single word of Athenæus, except such as are found quoted by Mr. Mackail in some of his notes to those plays of Aristophanes which he has edited? I know not how it may be now, but when I was in Oxford as an undergraduate a man might have a creditable degree and never read an oration of Demosthenes or any one of the Oratores Attici. I hope I shall not make any of my hearers shudder when I even advocate the perusal of the Byzantine historians and even the Greek Fathers. One result of such studies is that the appetite grows by what it feeds on, and the general knowledge thus acquired sets at defiance the coach or the crammer, or whatever he is to be called, who sets himself to defeat the efforts of the examiner to test real knowledge. The Greek romancers and satirists—especially, among the latter, Lucian—form almost a literature of their own; but I am at present only concerned with the suggestion that it is not only Thucydides and the dramatists who will give facility in and taste for reading Greek.

"I have referred to Greek, but it is only because the cry against Greek has been the loudest and most insistent. The narrowness of the Latin curriculum is still what one learns from those who have ceased to take any interest in Latin literature. Horace and Virgil, Virgil and Horace; how many have read or heard of the *Questiones Naturales* of Seneca? And how many, but for the exertions of Mr. Rowe and Mr. Justice Ridley, would have read Lucian's *Pharsalia*? I do not deny that what I have suggested might seem to make too little of the accurate scholarship which it has been the glory of the English universities to attain to; but, as I have already said, it is only the order of events upon which I am insisting. Let a man learn to read Greek or Latin with facility, and it will soon be with enjoyment, and if with enjoyment, then with gradually advancing accuracy. All I say is that if you wish for complete accuracy at first, and teach the *nuances* of Greek grammar before the pupil knows anything of the language, you run the risk of doing what I saw a gentleman said had occurred to him when discussing this subject—that he had hated Greek for the rest of his life; and, after all, we are not dealing with those who are to become Bentleys, or Porsons, or Professor Jebb, or Professor Butcher, but with people who, short of that standard of learning, may take a real and lively interest in classic literature, and hand over the lamp to others in their turn."

THE TEACHING OF SCIENCE.

Methods of teaching science were this year discussed only at the meeting of the Public Schools Science Masters' Association. At this conference Mr. T. L. Humberstone dealt with the use and misuse of terms in science teaching. Among cases of misuse discussed were such words as law, theory, hypothesis; cause, energy, matter; prove, verify, test. Mr. Humberstone then discussed such expressions as "prove Boyle's Law," or "prove

Archimedes' Principle," and instituted an inquiry into the connection between formulæ, such as $F = Ma$ and experimental data from Atwood's Machine. Prof. Tilden agreed that a misuse of terms is common, and said professional men of science are as much to blame as schoolmasters. He advocated the introduction of a little logic into the school curriculum.

Mr. F. B. Stead, of Clifton College, considered the possibility of teaching "scientific method" to boys whose education is almost entirely literary and who have no time for a regular course in chemistry and physics. "Scientific method" was defined as (1) the method of experiment and observation by which facts are ascertained, (2) the process of reasoning from particular instances to general laws, (3) the use of explanatory theories and their verification. Mr. Stead went on to consider whether it is possible to devise a short course (not more than two or three hours a week being allowed for the purpose) which shall provide intelligent boys in a classical Vth form with this mental equipment. He suggested that (1) such a course should be almost wholly practical; (2) it should *not* consist of "general elementary science," but rather (3) in the more or less thorough investigation of a severely limited range of phenomena; (4) more time might be obtained by partly combining the scientific and mathematical training of such boys. It was pointed out that possible objections are (1) boys are not interested in the processes of abstract reasoning but in concrete phenomena, and the attempt to instil a scientific habit of mind would fail; (2) such a course, if successful, might be regarded as an adequate substitute for the regular study of chemistry and physics; (3) such a course would encourage the notion that the fruits of knowledge may be acquired without the drudgery of learning. Prof. Armstrong, in the course of the discussion, suggested the substitution of the word "experimental" for "scientific" in Mr. Stead's scheme.

ASSISTANT-MISTRESSES' SALARIES!

IN view of the general re-organisation of secondary education, consequent on the new Education Act, it has become very desirable—indeed, necessary—that some standard should be fixed with regard to the salaries of assistant-teachers in girls' secondary schools. At present there is no such standard, and opinions are many and various as to what is an adequate salary for a fully qualified teacher—that is, a trained teacher possessing a university degree or its equivalent.

In June, 1904, the Headmistresses' Association conducted an enquiry into the cost of maintenance of a large number of secondary schools, and the figures so collected showed that expenditure per pupil on the salaries of teachers varied very considerably even among schools charging the same fees. The lack of any common standard in this matter was one of the most noticeable results of that inquiry. We have, therefore, considered it advisable to bring forward certain considerations which ought, in our opinion, to have weight in settling this question, and to make suggestions as to its solution.

There are two primary considerations on which any scale of salaries must be based—the expense of equipment for the work, and the cost of efficient living. The first of these necessitates a considerable sum, including school fees up to nineteen years of age, three years at a university, and one year's professional training.

This is really capital invested, and is a large sum compared with that required for many other professions now open to women. For elementary school teaching, for instance, two

¹ A pamphlet issued by the Association of Headmistresses on "The True Cost of Education."

years' training only is required, and the age at which the salary begins is as early as twenty or twenty-one. Elementary teachers, who get almost the whole of their preparation at the cost of the nation, have higher salaries than some secondary teachers, rising by steady and fairly rapid increments. There are also several fairly remunerative occupations open to women, such as good secretarial work, dispensing, higher branches of gardening, and various forms of teaching in special subjects, as music, drawing, physical training, &c., which draw from the same classes. In each of these cases the cost of training is lower, and the age at which the salary commences is also lower.

The cost of efficient living is not an easy matter to determine. Accounts of the expenditure of teachers are complicated by the fact that in the case of the great majority of young teachers their incomes are largely supplemented from private sources. They usually stay as a matter of course, during most of their holidays at least, with parents or relatives. As they grow older, this method of keeping down expenses generally ceases to a very large extent to be available, and their incomes not increasing proportionately, some considerable hardship is the result.

There is no doubt that the only sound plan is to make it possible for teachers to be genuinely self-supporting, and no scheme of salaries inadequate to this can be looked upon as satisfactory. They must be sufficient to cover board and lodging for the whole year, holiday expenses, dress, books, medical attendance and provision against sickness, a possibility of saving for old age, and to leave some residue for recreation. An income which does not permit a certain amount of travelling and amusements cannot be said to be sufficient to maintain educational efficiency—an efficiency depending, as it does, so largely on the personality of the teacher.

Mr. Alfred Pollard has, with the aid of experts, compiled tables of the cost of living for educated women, which are worth studying.

	Salary £100. s. d.	Salary £120. s. d.	Salary £150. s. d.
Board and lodging during 40 weeks ..	50 0 0	50 0 0	60 0 0
Half rent during holidays ..	4 0 0	4 0 0	5 0 0
Railway and other expenses for six weeks' holiday with friends ..	4 0 0	4 0 0	4 0 0
Six weeks' holiday at own expense ..	9 0 0	12 0 0	15 0 0
Educational books ..	1 0 0	2 0 0	3 0 0
Dress ..	15 0 0	15 0 0	20 0 0
Petty cash for omnibuses, amusements, presents, charities, &c. ..	4 10 0	6 0 0	9 0 0
Laundry ..	3 10 0	3 10 0	3 10 0
Medical attendance and provision against sickness ..	5 0 0	7 10 0	7 10 0
Sum available for provision for old age ..	4 0 0	16 0 0	23 0 0
	£100 0 0	£120 0 0	£150 0 0

NOTE.—There are obviously many localities in which £50 would not provide board and lodging for the forty weeks of the school year.

It should be noticed that in these tables Mr. Pollard assumes the existence of friends with whom part of the holidays can be spent, and also, in regard to the last item, a teacher beginning to save at the age of twenty-five would have to put by every year the sum of from fifteen to twenty guineas (according to conditions as to return of premiums) in order to obtain, at the age of fifty-five, an annuity of £70 a year. Tables, showing the actual expenditure of a number of teachers, have been collected, and in these the item "presents and charities" is generally considerably larger than that in the above tables: in some the expenditure on holidays is lower, but in that case the item "medical attendance" is usually high. The last item, "provision for old age," by no means always appears.

It cannot be considered that these tables are reckoned on an extravagant scale. Of all teachers, domestic economy instruc-

tresses should be pre-eminently qualified to cut down the expenses of living, but from a number of summaries of accounts of these teachers it appears that out of twelve earning from £75 to £95, who sent in returns, only two were self-supporting, and out of ten earning from £100 to £115 no more than six were self-supporting. But in these cases, the sums spent on dress were very inadequate (and suitable dress affects the efficiency of the teacher), and that spent on "amusements" is, in some cases, reckoned in shillings.

We consider, therefore, that a fully qualified teacher (and by fully qualified we would be understood to mean a degree and professional training) should receive for her probationary year a salary of not less than £105 to £120. For her second year her salary should be at least £120, and should rise to £150. There should, however, be several higher posts in the school; at least three with salaries rising to £200, and, in a fairly large school, about four more at salaries rising to £180. In general, the senior classical, mathematical and science mistresses should receive salaries rising to £180 or £200. This scheme might, however, be varied in many ways, the same money being distributed a little differently. For instance, in a school of a modern rather than classical type, there should be a senior modern-language mistress with the same salary as the senior classical mistress in another type of school. The important point is that there should be several good, well-paid posts open to assistant-mistresses with first-class qualifications and proved ability to teach, and that thus a cut-and-dried system of increments of salary allowing no openings for exceptional talent should be avoided. The above scheme of staffing assumes that the teaching is given to fairly large classes, with little subdividing and no individual instruction. In large schools which prepare many pupils for the universities, where much specialisation in the sixth form is therefore necessary, additional expense cannot be avoided, and the salaries of some mistresses ought to rise to £300, or even more.

The question of salaries is, it is true, a question of pounds, shillings, and pence, but it is one also of the efficiency of teachers, the most important of all educational questions, on which all others must ultimately depend. The question is not self-dependent—(indeed, there exists no question which can be truly so described)—but it is a part of a larger social question. The number of professions open to women has increased considerably during the last few years, and is still increasing, and it is becoming more and more necessary to face the fact that salaries must be sufficient to repay the teacher for the relatively large expenditure of time and money she must bestow on her equipment if we would induce capable women to take up the work of education.

It will be nothing less than a national misfortune if women with first-class abilities are attracted to better-paid professions, leaving the important work of education in less capable hands. But the question of obtaining efficiency is not more important than that of retaining it. Even if it is possible to find enthusiastic teachers who are willing to work for inadequate pay—until they break down—this is a very extravagant plan. We must realise that if we would have efficient teachers we must pay salaries large enough to enable them to retain educational efficiency. It is also extremely desirable that the teacher should come from at least as good a social class as her pupils, and should be able to afford some degree of social life.

It is all-important that at this crisis in educational affairs the new authorities should be in possession of all available facts, and in a position to form a true judgment on this vital question, and especially that they should realise the true cost of maintaining educational efficiency, and should not allow fees to be fixed at so low a rate that it is not possible to offer salaries large enough to secure this end.

HISTORY AND CURRENT EVENTS.

IT has often been remarked that the Constitution of the U.S.A. preserves in a mummified or fossil form the methods of government which prevailed in this country before the Revolution of 1832, or were at least then being advocated in Great Britain as "reforms." They have excluded the Cabinet from Congress, they have an automatic redistribution of seats, and in other ways they are of the eighteenth and previous centuries. They are just now illustrating this by an impeachment. We have not had an impeachment since 1805, Lord Melville's being the last instance of that old-world process, and that of Warren Hastings (1789-95) being the last famous example. When, in 1878, a petition was presented to the House of Commons that Lord Beaconsfield should be impeached for bringing Indian troops to Malta, the House simply laughed. Impeachment is as dead as attainder and other such methods of parliamentary strife. But the founders of the American Constitution were conservatives, and they still have the old methods there for removing troublesome Presidents or Federal Judges. Which country is the more "go-ahead"?

THE Italians have gone to work with the Somali Mullah in a different way from that of Great Britain. This country has had a costly and difficult war with him which had a somewhat doubtful ending. The Italians of East Africa seem to have acted on the ancient counsel that if you have aught against your brother you should speak to him alone. And he has heard them, and they have gained their "brother." Signori Sersale, a traveller and explorer, and Pestalozza, the Consul-General, have spoken face to face with the Mullah, have earned his respect for their bravery, and have come to terms with him. One feels that this is an even better way of avoiding war than the cumbrous machinery of arbitration or mediation of the Hague tribunal. It was the method adopted by Cecil Rhodes in the Matoppo Hills. It has been used sometimes in the conflict of parties in England, but "history" affords scarce any parallel to this "current event." The world might have been better if it did.

CURRENT history in Morocco is interesting. The Sultan made an attempt to Europeanise his government. With what wisdom in details may be open to question. But the result has been an almost universal revolt of his subjects against foreign influences. Whether it is better or worse than the old system, with its Eastern principles and maxims, Moroccans, at least those who are capable of making their opinions felt, do not want Europeanising. And they have succeeded in the way that is necessary wherever public opinion is not organised into a talking-machine, in expelling the foreigners and their ways. The "brigand" Raisuli is practically master of the country so far as he wants to be, and folk who want to live peaceably there take protection under him rather than the more "legitimate" rule of the Sultan. One is reminded of Elizabethan Ireland, "All Ireland cannot rule this Earl." "Then let this Earl rule all Ireland." When a rebellion has been successful, it is no longer rebellion; and in fact, if not in name, it becomes the government. Englishmen ought to sympathise somewhat with folk who object to things "made abroad."

RUSSIA is attracting the attention of the European world not only because of her war with Japan, but because of the internal developments of which the war seems to be the occasion. The war seems to be repeating the course of the Crimean war. Russia is being bled to exhaustion by a struggle at one of her extremities. And as her conflict with Great Britain, France, and Sardinia, ending in failure, led to a change in the methods of government

and to advance towards Western ideas, so now the progress of the Japanese in Manchuria and the fall of Port Arthur seem to be effecting changes in the spirit and methods of the autocracy. The Zemstvos are asking for representative institutions, apparently a parliament which is to represent at least European Russia. Whether such an institution would be possible, or if barely possible, workable, is doubtful considering the size of the country and the divergence of interests. But what the Tsar offers in reply is an increase of local government. It will aid Englishmen to understand the matter if they remember that the Unionist reply to the Irish demand for Home Rule was similar. Not a Parliament in Dublin, but County Councils have been granted.

ITEMS OF INTEREST.

IN his presidential address at the annual meeting of the Incorporated Association of Headmasters on January 11th, the Rev. James Went referred to the backwardness of secondary education in this country. He said that buildings and appliances which would not be tolerated for elementary schools are considered still sufficiently good for secondary schools. He mentioned an instance where a building condemned after many years of service as an elementary school, was actually opened as a so-called high school and put in competition with a neighbouring grammar-school. The indifference to the welfare of secondary schools has arisen, Mr. Went continued, from historical and social causes, but these are breaking down under the new conditions prevailing since Mr. Balfour's Act of 1902. Discussing the new regulations for secondary schools, Mr. Went gave them a general approval and incidentally expressed the opinion that the Board of Education would be well advised to utilise the University Local Examinations as part of the machinery for estimating the efficiency of schools.

NUMEROUS resolutions on important questions of current educational interest were adopted by the Association of Headmasters. Those concerned with the new regulations for secondary schools were as follows: That this association regards the new regulations for secondary schools with satisfaction in general, but regrets that the Board of Education does not provide (a) for the calculation of grants upon terminal attendance; (b) for the recognition of advanced courses to follow upon the existing four-year course; (c) for ensuring comparative freedom of curricula to schools satisfying certain tests of a higher liberal education; (d) for an elastic percentage division of the whole school time when prescribing for groups of subjects, in place of the existing rigid minima of hours or periods in each week. A rider was agreed to expressing the opinion that the financial basis on which grants are calculated is not at all adequate, and protesting against any application of the regulations to schools hitherto earning grants from the Board, which would result in these schools receiving grants on a lower basis than the past. Resolutions approving the main proposals of the Consultative Committee to the Board of Education for the establishment of school certificates were also passed by the association.

THE question of Greek naturally received the consideration of the Headmasters' Association. After a discussion, in which the arguments for and against compulsory Greek for candidates wishing to enter the universities were set forth again, the following resolutions were carried: "That in the opinion of this Association it is desirable that the universities should institute a two-fold entrance examination, (a) for candidates proceeding to degrees in arts in general as at present, but with a higher standard in literary subjects; (b) for candidates proceeding to

degrees in mathematics and science with a modern language, including translation by sight, composition, and an oral test, as an alternative for Greek. (2) That the provision for papers in English and history, and for the omission of Paley's "Evidences" from the Cambridge Previous examination, as laid down in the first report of the Cambridge Studies Syndicate, should be insisted upon in examination under both (a) and (b) above. (3) That a new degree in mathematics and science should be instituted, differing in title from the degree in arts, but of precisely the same university standing."

At the annual general meeting of the Incorporated Association of Assistant-masters at Mercers' School, London, perhaps the salient resolution on matters political was one advocating confidence in the Local Education Authorities. The motion was to the effect that an endowed school for which the local authority provides a large proportion of the maintenance money should be controlled according to the wishes of the authority, and that the Board of Education should not oppose the abolition of the existing governing body if the authority is in favour of such abolition, provided that due provision is made on the local authority and the committee of managers for representation of secondary and university education. With this proviso, that a leaven of men of wide culture is necessary on these authorities, the Assistant-masters' Association did well to express its confidence in the intentions of the county councils. Naturally some preliminary, and, perhaps, costly mistakes will be made, but there can be no doubt that increased popular control will bring greater popular interest, and the state of higher education will be improved as the result of the increased responsibility of the citizen. At the same time, we do not agree with several of the strictures passed upon the "pious founder" as an incorrigible sinner who never improves. It would be as well to retain a large element of the governing bodies until the new authorities have learnt not to give their whole interest to elementary education.

Of matters affecting curriculum, the most important was yet another discussion of the Cambridge Examination Syndicate's report with reference to compulsory Greek. It will be remembered that the Headmasters' Conference decided emphatically in favour of compulsory Greek; the Assistant-masters' Association rejected it with equal emphasis. On an examination of the quality of these votes, we notice that the large majority of the headmasters teach the subject, whereas only some 3 per cent. of the members of the Assistant-masters' Association have to do with Greek, so that it would appear that a relation exists between these decisions and the interests represented in the two assemblies. Mr. A. A. Somerville (Eton) urged that our present system of teaching Greek is a failure. The majority of pupils who study it do not benefit by Greek literature, but these, if taught a modern language, would be able to get nearer to the soul of it. Mr. F. Storr advocated free trade in this matter; there are those who can best absorb their culture through Greek, but there are also those who can attain equal culture through other media. Mr. Daniell (Mercers'), while admitting that science scholars get the benefit of Greek studies day by day, felt that we ought to widen the entrances to our universities. It is devoutly to be hoped that a sound knowledge of the substituted language will be demanded by the universities when—as yield they shortly must—they yield to the unmistakable educational trend of to-day.

At the commencement of the same meeting, Mr. G. F. Daniell, the retiring chairman, presented the annual report for 1904, and delivered an address. During the course of his remarks, he referred to a recent scheme for one of the greatest public schools in England which he said threw an unpleasant

side-light upon the indifference of the Board of Education to assistant-masters. The report concerned contains a proviso "that all the thirty-two house-masters shall, with six possible exceptions, be bachelors, or live as such." Mr. Daniell feels that if this subject were put before the parents, who have to trust a large amount of the training of their boys at a critical age to assistant-masters, they would say that the regulation is a serious blot on the scheme. Mr. Daniell went on to urge teachers, administrators, and even statesmen, to think biologically, and emphasised the unwisdom of insisting upon celibacy for one of the most intellectual sections of the community. But this, like so many other grave national problems, resolves itself ultimately into a question of finance, and at present will serve, it is to be feared, merely to accentuate the truth, already sufficiently clear to educationists, that many much-needed improvements in English secondary education must wait until more money is somewhere forthcoming, whether from the Treasury, from local governing bodies, or from public-spirited millionaires.

In the highly successful meeting at University College of the Classical Association of England and Wales, it seemed to be generally admitted that much was to be done in the way of improving methods of classical studies. The Lord Chancellor, in his presidential address, advocated a far wider reading of authors: Herodotus, Athenæus, Lucian, and even the Byzantine historians, should be more freely read, and we should first try to produce facile readers in Latin and Greek, allowing accuracy to come by the way. The suggestion of Prof. Percy Gardner was that we should give greater vividness to our studies by using the eye; lantern slides are of the greatest help in this direction. The lantern can now be used in daylight, and attached to any ordinary electric light; and in Germany and America very complete lists of good slides are available for the purposes of teaching. Mr. Gilbert Murray made some valuable suggestions on the teaching of Greek plays. The secret is the thorough realisation of the dramatic motives of the actors, rather than a too close attention to matters linguistic. We are apt to forget that we are dealing with spoken language, with words uttered by a human voice capable of emphasis; that in drama the least eloquent speeches are often the most dramatic, and that apparently frigid and comic scenes are often very near in language to those which to a person in a tense mood are particularly tragic and poignant. Another suggestion was Prof. Butcher's, that an attempt should be made to introduce a uniform system of Latin (and later Greek) pronunciation, at least for the British Isles.

BUT the association seemed to think with Mr. T. E. Page that not only are improved methods necessary if classics are to be lifted out of their present critical condition, but that a substantial lightening of the curriculum is imperative. All practical teachers who have considered their classical subjects in relation to a diminishing share of the time-table must have been thinking over this problem, and probably most will agree with Mr. Page that what can best be spared is Greek grammar and composition. Many feel that too much time is devoted to classical composition. Mr. Page would have us, in brief, read our Latin and Greek books as before, though more widely in Greek, so as to give our pupils a real appreciation of Greek literature; practise Latin prose composition, and study Latin grammar, but, at any rate in lower and middle forms, give up Greek composition and grammar. The learning of two ancient languages is too great a strain on boys before they reach the age when they specialise on either classics or mathematics. We hope the committee of the association will speedily devise some sensible method of lightening the classical curriculum, so that what continues to be taught may be taught scientifically.

THE Modern Language Association held its annual meeting at the University of Manchester on January 12th and 13th. Prof. Sadler, who has been well styled, "the unofficial Dictator of English Education," is the retiring president, and in his presidential address on "The Teaching of the Humanities," he made some noteworthy remarks. He maintained that the future of education depended on the personality of the teachers and not on courses of study or on suitable buildings, however important these latter might be. The teachers in secondary schools must have suitable conditions of work and adequate salaries to lead a vigorous intellectual life; they must have leisure and means to be able to travel and acquire a knowledge of facts at first hand. He defined the humanities as the relations of man to other men and to the world around him. This would show at once that there was no real conflict between the humanities and the physical sciences. If the humanities were taught properly in the secondary schools of this country our education would tend at last to be inspired by definite national aims.

MR. MILNER BARRY, of Mill Hill, proposed a resolution welcoming the disappearance of compulsory Greek, declaring that the introduction of modern languages in its place would have a far-reaching and beneficial influence on all the secondary schools of the kingdom. The resolution was supported by Mr. L. S. R. Byrne (Eton), by Prof. Fiedler, of the University of Birmingham, by Mr. A. A. Somerville (Eton), and by Mr. Storr, and was carried with one dissident. But we fear that the Modern Language Association is as one crying in the wilderness, for by their recent resolutions the Headmasters' Conference and the Incorporated Association of Headmasters have probably put back the clock of reform for another thirty years. Miss M. K. Pope, of Somerville College, Oxford, read a paper on the place of philology in modern-language teaching, and Prof. Robertson, of London University, contributed a most thoughtful paper on "Schiller after a Century," in which he brought out clearly the fact that "Don Carlos" was the turning point in Schiller's dramatic life.

THE second day's proceedings began with a paper in French by M. Barlet, of the Mercers' School, mapping out a course of French literature which should be possible in all secondary schools by intelligent and competent teachers. He was followed by Mr. M. P. Andrews, one of Mr. Lipscomb's assistants at Bolton, with a paper on some considerations of time in modern-language teaching. But by far the most interesting contribution was an eloquent appeal by Mr. J. W. Headlam, one of the Staff Inspectors of the Board of Education, whose recent report on the teaching of languages in secondary schools created such enthusiasm last year. Speaking almost without a note, he sketched out a scheme by which the teaching of all languages should aid the boy or girl in the acquisition of the mother tongue; especially did he dwell on the importance of translation into English from ancient and modern languages in the upper forms to ensure the complete grasp of a difficult passage, and to teach the proper manipulation of English. The concluding item was a paper by the Rev. H. J. Chaytor, of Liverpool, on the place of French teaching from the historical point of view. Although Mr. Chaytor had to cut his remarks very short, he was still able to map out a course of early and middle French which could be studied with profit by ordinary school-boys.

THE annual meeting of the Incorporated Association of Assistant-mistresses in Public Secondary Schools was held on January 14th. Miss Laurie, president of the Association, was in the chair, and in the course of her presidential address said that the number of members of the association was now over 800—an increase of over 100 in the last year. The association considered a scheme of salaries for assistant-mistresses which

had been drawn up by a committee. After discussion it was agreed that the *minimum* initial salary during a probationary year, for a mistress with a university degree or its equivalent, and training, should be £120 a year, and that for those without such degree the *minimum* should be £100. It was also agreed that the *minimum* rate of augmentation should be £10 a year for the first two years, and afterwards £5 a year until a *minimum* of £150 for non-graduates or of £200 for graduates was reached.

THE association also discussed the scheme of the Consultative Committee of the Board of Education for the establishment of school certificates. The following resolutions were passed:—
(a) That this association approves the establishment of the three classes of examining bodies as set forth in proposal (3), but is of opinion that the representation of teachers in schools on such examining bodies should be obligatory rather than optional.
(b) That with regard to proposal (16), the senior certificate will be of little service in removing the evil of the present multiplicity of examinations in the upper part of the school, unless it is under certain conditions accepted in lieu of the matriculation examination of the universities, and also of Responsions and the previous examinations.
(c) That the words "under sixteen years of age" be omitted from proposal (16).
(d) That this association, while agreeing that there should be no special honour certificates, would desire that a mark of distinction should be given in any subject to a candidate who had specially distinguished himself in the ordinary papers on that subject.

THE Senate of the University of London has empowered the University Extension Board to arrange a second holiday course for foreigners next summer. To carry out this purpose, the Board has appointed a special board upon which teachers in secondary schools will be represented. As last year, the course is to be under the direction of Prof. Rippmann. The full course, limited to 150 students, will last from July 17th to August 18th; a shorter course, limited to 100 students, will last from July 31st to August 8th. Tickets will, in the first instance, be allotted on June 1st to those who have previously made application, and the remaining applications will be filled in order of receipt. Students cannot be admitted after the course begins, and tickets should be obtained before July 15th at the very latest. Special arrangements will be made to suit the convenience of foreign governments who are officially sending students to the course. Full details may be obtained by intending students on or after May 1st. All communications should be addressed to the Registrar of the University Extension Board, University of London, South Kensington, S.W., with words, "Director of the Holiday Course," written on the top left corner of the envelope.

A DEPUTATION from the Executive Committee of the Association of Education Committees (England and Wales) waited upon the Board of Education recently to urge upon the Board the adoption of a more liberal scale of grants for secondary schools, and to make an appeal for a larger share from the Government of the cost of training pupil-teachers. The deputation pleaded also that the time has arrived when it is necessary to secure the compulsory attendance, up to the age of fourteen, at evening continuation schools, of all children who do not continue as whole-day scholars up to that age. Replying to the deputation, Sir William Anson promised that the appeal for more money for secondary schools should receive his support, but expressed a doubt as to whether he would be able to obtain increased funds. If more money were forthcoming, Sir William said he would increase gladly the grants to pupil-teachers, but here, too, there is opposition on the part of the Treasury. As to evening continuation schools,

he expressed regret that money is wasted on elementary education because it is allowed to break off short. As to the age limit of fourteen, the question of cost makes it almost impossible to enforce a system of compulsory attendance. If an endeavour were made to compel the teachers to teach in the evening, after they had been teaching in the day, the quality of their work might be seriously lowered, while a double staff would involve heavy expenditure.

THE Oxford Delegacy has issued regulations for examinations to be held by the Delegates during 1905 for school certificates and Army leaving certificates. A junior school certificate will be awarded to any candidate who has attended continuously one or more approved schools for two years at least; passes the Junior Local Examination in 1905 under certain conditions which have been published; and is under sixteen years of age on July 1st, 1905. A senior school certificate will be awarded to any candidate who has attended continuously one or more approved schools for three years at least; passes the Senior Local Examination in 1905 under certain conditions which have been published; and is under nineteen years of age on July 1st. Subjects other than those prescribed may be endorsed on a school certificate if a candidate passes in them at a subsequent examination.

A LEAVING certificate for candidates for the Army will be granted by the Delegates to any boy who obtains a senior school certificate, and, in addition, is not less than seventeen years of age on July 1st, 1905; has passed in English history, geography, mathematics, together with a special paper on practical measurements. The candidate must also have passed in two of the three following subjects: (a) chemistry and physics, in at least two divisions, including a special practical examination; (b) French or German; (c) Latin or Greek.

ADVANTAGE is being taken in different counties of the power given by the new Education Act to levy a rate for higher education. The current number of the *Record of Technical and Secondary Education* gives the following particulars. In Cheshire a twopenny rate has been levied, which is estimated to bring in £22,500; in Middlesex a 1½d. rate is contemplated, and will produce £35,000; in Lancashire a rate of 1½d. is expected to produce £44,400; and in Warwickshire £3,918 will be available from a penny rate. A halfpenny rate has been authorised in nine counties, producing in the following cases the amounts stated:—Cornwall, £2,230; Leicestershire, £4,548; Surrey, £8,923; and Wiltshire, £2,733. The other counties which devote a halfpenny rate to higher education are, Buckinghamshire, Derbyshire, Devon, Essex, and the West Riding of Yorkshire. In some cases the whole, or a definite part, of the rate is devoted entirely to some specific object such as the training of pupil-teachers and not to the general purposes of secondary education.

THE Report of the Director of Education for the Transvaal and the Orange River Colony, reviewed at length in our issue for November, 1904, which it has been previously impossible for the public to obtain, has now, by permission of the Governor, been issued to the public by Messrs. Longmans, Green and Co., at 2s. 6d. net. In view of the general interest of the report, which incidentally refers to the educational systems of all parts of the self-governing British Empire, it will prove of value to students and teachers who wish to compare these systems. The entire proceeds from the sale of the volume are to be devoted to the Transvaal and Orange River Colony Teachers' Benevolent Fund.

WE have received a copy of the report, published by the Gloucestershire Education Committee, of the conference on

Agricultural Education, held at Gloucester on October 15th last. The report has been edited by Mr. Charles Bathurst, junr., and Mr. John C. Medd, and costs 3d. We recommend all who are in any way responsible for agricultural education in whatever capacity to secure a copy of this report.

THE next conference of the Girls' School Music Union will take place on February 25th at the Kensington High School, at 3 p.m. Lady Mary Lygon will preside. A paper by Mrs. Woodhouse (Clapham High School) and Miss Elsa Froebel will be read on "The Desirability of Special Training in the Teaching of Music." Mrs. Spencer Curwen will open the discussion.

THE paper by the Rev. J. O. Bevan on the "Fourth 'R' in Education: viz., Revolution; or, Study and After-study," read recently before the College of Preceptors, has now been published. Copies of the pamphlet can be obtained from the Educational Supply Association, Limited, price 3d. net.

SCOTTISH.

THE Scotch Education Department has issued a circular detailing the conditions and regulations for the Leaving Certificate Examinations, which will begin on June 21st. Hitherto the minimum age for admission to the examinations has been thirteen, but in future no candidate will be accepted unless he or she be at least fourteen years of age by the October 1st following the proposed presentation. The circular deplors the haphazard presentation of pupils in isolated subjects, and states that every candidate ought to have some definite form of Group Certificate in view. Their lordships reserve to themselves the right of disallowing the papers of those pupils who do not seem to be following a systematic course. Special attention is drawn to the note on the mathematical papers, where it is stated that books of logarithms will be supplied by the Department for the use of candidates in the Honours and Higher Grades.

THE movement for the encouragement and development of the study of Gaelic literature has secured a great impetus by the decision of the Scotch Education Department to recognise Gaelic as one of the subjects in the Leaving Certificate Examinations. For the present there is to be only one standard recognised for a pass, and that will be equivalent to the Lower Grade in other language subjects. Conversation will form an essential part of the examination, and the written paper will, as in other languages, consist chiefly of translation and re-translation. One important provision in regard to the issue of certificates is that, provided the qualifications of the teacher and the scope of the curriculum in the subject have been approved by the Department, due weight will be given to the verdict of the teacher in determining the success or failure of individual candidates. This is a concession which has for many years been desired in the other subjects of the examination, and it may safely be anticipated that a provision so necessary and so educational will soon be found governing all the subjects of the curriculum.

THE annual meeting of the Sloyd Association of Scotland was held in the E.C. Training College, Edinburgh. Dr. Morgan, the president, delivered an address on the "Educational Value of Manual Occupations in Junior Classes." He pointed out that, while we have in our schools kindergartens for the youngest children, and woodwork for the senior pupils, there are but rarely any corresponding occupations for the junior pupils. He emphasised the danger in the kindergarten of repeating the well-worn round of occupations without any thought of the educational purpose of each. Without these underlying prin-

ciples, the exercises are merely the dead letter without the vivifying spirit. The manual work of the junior classes should be a logical development of the kindergarten methods, and should lead up by easy stages to the more advanced work of the upper classes. Dr. John G. Kerr, Secretary to the Board of Examiners, stated that examinations for the issue of certificates had been in operation for six years. During that period 269 candidates presented themselves for examination, and of these 195 obtained certificates and were registered as teachers of woodwork by the Scotch Education Department.

SIR HENRY CAMPBELL-BANNERMAN, in the course of a speech on last year's Education Bill, stated that the postponement of that measure was not an unmixed evil, as it afforded time for further consideration. He declared himself a strong supporter of the School Board System. If, in some cases, the present areas were too small, it was easy to enlarge them, but not to the extent of lessening the close local interest in educational affairs that existed under the present conditions. He regretted the modern tendency to confine the elementary schools to purely elementary work. He was a strong believer in the efficacy of the old Scottish system, whereby the local elementary school was qualified to carry the promising pupil—the lad of parts—far beyond the limits of elementary education. The circumstances of the great mass of the people in rural districts did not allow of their children removing to special centres for higher education. Their secondary education must be obtained on the spot, or could not be obtained at all.

THE Annual Congress of the Educational Institute of Scotland was held in the Town Hall, Ayr, on January 4th and 5th. The Congress programme was an exceedingly interesting and varied one, but the papers were so numerous and so long that no time was left for discussion. Mr. James Young, the president, in his opening address, said that with a freer code and a more varied curriculum confidence in our educational system, which for some years has been undermined, is now again restored. The weak link in the educational system is secondary education. The small area is the obstacle to the proper development in that direction, and until that is swept away it is useless to look for further progress.

DR. C. M. DOUGLAS, M.P., in the course of an interesting address on Scottish education, expressed the hope that Mr. Graham Murray and the people of Scotland would not allow any crisis, however acute, to turn their attention away from the vital importance of setting their educational house in order. Last year's discussion on the Education Bill clearly showed that the country is united in the demand for the retention of school boards and for the enlargement of the areas that they administer. While he deprecated the creation of areas coterminous with the larger counties, he thought that every area should be large enough to allow for the provision within it of the various grades of education. The Education Bill did not touch at all on the sphere of university education, but they could not begin too soon to press for reform in that connection. The universities have done enormous service to the education of the country, but there is a strong opinion that their position is one of growing danger, that the times are changing round them, and that they are not in that full contact with the national life that their position demands.

AN interesting feature in the Congress proceedings was the presentation to Sir Henry Craik, K.C.B., of the degree of Honorary Fellow. The President, in conferring the degree, said that the Institute, in enrolling among its honorary members a man who had rendered such conspicuous services to Scottish education for over twenty years, was honouring itself in honour-

ing him. He ventured to express the hope that, in another and what is generally considered a higher sphere, he might be long spared to help in shaping and fostering by legislation the growth of that educational system which he has done so much to develop. Sir Henry, in reply, thanked the members of the Institute for receiving him into the fellowship of a profession which has earned in such large measure the gratitude of the whole nation. Throughout his whole official career the most cordial relations had existed between himself and the Institute. Notwithstanding many differences on points of detail, they were always at one in their desire to maintain the noble traditions of Scottish education by developing it in accordance with present-day conditions and needs.

THE local examinations in subjects of science and art, conducted by the Education Department, will begin this year on April 20th, and continue throughout May and June. These examinations are open to all students in continuation classes, and presentation is entirely voluntary. All students who desire examination should make application for that purpose to the managers of the classes which they are attending. It will then rest with the managers to determine whether they will make application for an examination, and, if so, in what subjects. Copies of the regulations for the examinations, and of the time-table of examinations, may be had on application to the Department.

IRISH.

THE Department of Agriculture and Technical Instruction for Ireland announces that a limited number of teacherships-in-training, tenable at the Metropolitan School of Art, Dublin, will be open for competition at the beginning of the session 1905-6. The object of these teacherships-in-training is to encourage capable art students to undertake such a course of training as will enable them to become art teachers. Their holders will be entitled to free admission to all the day and evening classes at the Metropolitan School of Art for the session 1905-6, a maintenance allowance of 21s. per week during the session, and third-class railway fare for one journey to and from Dublin. The teacherships will be awarded partly as the result of an examination, and partly for work submitted. Candidates must be not less than eighteen and not more than thirty years of age on the 1st September, 1905, and must either have been born in Ireland or have been resident there for three years. Forms of application, with full details, may be obtained from the Secretary of the Department, or the Registrar of the Metropolitan School of Art, and must be filled up and returned not later than April 29th.

THE Department similarly offers not more than (a) ten open scholarships, and (b) ten limited scholarships, to assist domestic economy students in undertaking the full course of instruction at the Irish Training School of Domestic Economy, Kildare Street, Dublin. These scholarships will entitle the holders to free admission to the full course of training as teacher of domestic economy subjects, but do not carry any subsistence allowance. The examination will be partly written and partly *visu voce*, and will be held at various centres in Ireland on Tuesday, July 4th. The limited scholarships are intended as rewards for successful attendance and work at local technical schools or classes, and will be conditional upon the local technical instruction committee, who nominate the candidate, paying ten guineas, half the fees for the full two years' course of instruction. Full particulars may be obtained on application to the Secretary of the Department.

AN important series of some twenty lectures and demonstrations are being given by Prof. Antony Roche at the Royal College of Science, Dublin, on sanitary science. The first lecture

was delivered on January 21st. The lectures are intended specially to assist candidates seeking employment as sanitary inspectors, but are also suitable for all engaged in building, plumbing, and kindred trades, as well as persons generally interested in sanitation and public health.

THE question of a university which will satisfy the needs of Roman Catholics, never long dormant nowadays, has been recently discussed with renewed energy. The recommendation of the Royal Commission to endow the Catholic University College in Stephen's Green, Dublin, under the Royal University, has not been accepted by the Government because it would have broken up the Cabinet again. We have arrived, therefore, for the present at a *non possumus*. But the question must be solved, and has accordingly been attacked from divers points of view. Sir Christopher Nixon, on behalf of the Roman Catholic Medical Faculty, declares that a thoroughly equipped school of medicine in connection with an adequate university is a pressing need. Father Finlay has urged Catholics to subscribe and found a university for themselves, but in view of the failure of Cardinal Newman's experiment, this seems a forlorn hope. At a very interesting meeting in the Mansion House, Mr. Dillon appealed for a national university under lay control, and expressed a belief that it was possible to have in Dublin in ten years a first-rate university more than able to hold its own against Trinity. He did not explain whether he thought that the Roman Catholic hierarchy would be content with such a scheme. This point was seized upon by the Very Rev. Dr. Macdonald, of Maynooth, who declared that, rather than fight for such a university, it might be better to come to terms with Trinity College and the Queen's Colleges and to make use of such remedies as they had to hand. He was followed by Dr. Mahaffy, who made an appeal on behalf of Trinity College, pointing out that many Roman Catholics had been educated there without injury to their faith, and invited others to come. This was followed by a letter in the public press by "Libertas," urging that Trinity College should make itself a national university by expelling the divinity school and closing the chapel, but this suggestion was at once rejected by the Provost. The feeling of Trinity is in just the opposite direction, and favours rather the erection of a Roman Catholic chapel within its borders, if this would meet with the approval of Roman Catholics.

So far we have mere discussion, but Trinity College has taken some practical steps. At the end of the Christmas term it passed a decree establishing scholarships for women, and another decree establishing twelve new entrance exhibitions, six of the value of £20 a year for two years, and six of the value of £15 a year for two years. These exhibitions are to be awarded to successful male and female candidates at the Senior and Middle Grade examinations conducted by the Board of Intermediate Education in Ireland. Particulars of this scheme are wanting, but its purpose is plain. As Roman Catholic schools do well at the Intermediate examinations, these exhibitions will be offered largely to Roman Catholic students, and are meant to attract the most promising of them to Trinity. The publication of this decree was immediately followed by an offer from an anonymous Dublin citizen of the sum of £5,000 to extend it. He at the same time promised that, if at the end of five years there is a satisfactory increase in the number of Roman Catholic students in Trinity College, he will give another £5,000 towards the erection of a Roman Catholic chapel in Trinity.

WELSH.

THE Carnarvonshire Education Committee have adopted a scheme for the teaching of Welsh in the primary schools. The scheme was drawn up by two sub-committees, from Carnarvon-

shire and Anglesey, after consultation with "leading educationists occupying positions of authority." The scheme claims: "It is now matter of common agreement among educationists that young children should be instructed exclusively in the mother tongue." The scheme, therefore, requires that young children should be taught to read Welsh only. By the postponement of English reading progress will be more rapid. By the "natural mode of phrasing, which they will have acquired in reading Welsh . . . the monotonous intonation of mechanical and unintelligent reading will be less heard in the schools." Welsh is to be taught throughout the infant schools, and through the standards for Welsh reading, Welsh composition, and Welsh translation. In arithmetic, however, the multiplication table need not be carried above 9 as multiplier or multiplicand.

THE scheme is to be carried out in every school, the general scheme being so modified that the work of the teachers shall not be thereby increased. Head teachers are requested to submit their own schemes to the approval of the committee at least two months before the commencement of the school year.

"THE scheme" has been adopted by Carnarvonshire "in its entirety." It does not seem to have occurred to the Committee to co-opt practical elementary school teachers, to obtain the benefit of consultation and advice from experience of infants' school and primary-school teachers. But already one such teacher has pointed out that he has misgiving as to teaching arithmetic in Welsh. Another objection is urged in the case of schools where some children are Welsh and some English. For it is clear that, unless the schools are better staffed, there would be the difficulty of either requiring English-speaking children to begin school work in Welsh, or else instruction to go on concurrently in Welsh and in English classes.

WHETHER these difficulties can be faced remains to be seen when the head teachers present their proposed schemes for carrying out the instructions of the Education Committee. It is only right to state that Prof. Henry Jones, a true lover of Wales, though he approves of giving the Welsh language a far greater place in the schools of Wales than has been common in the past, declines to "fling himself headlong" into approval of the scheme. He would aim at making the schools bilingual from top to bottom. The Bishop of St. Asaph asks: Who is to settle the question as to what the children should be taught? and replies, "Surely, the parent."

THE question of further language-teaching arises in connection with German. There is comparatively little teaching of German in the Intermediate schools. One headmaster has lately suggested that the claim of German is pressing. It is easy to point out the importance of this subject for theology and for science, but it is news to be told that the "best grammar of the Welsh language is written in German and by a German." But it is necessary to enter a *caveat*. It is easy to make suggestions for the inclusion of a great number of sciences, a great number of languages, a great number of arts, and so on, in the curriculum of the schools. But a new inclusion can only be made by excluding something already there. The Carnarvonshire scheme has this merit: it requires that Welsh shall be taught in the early school life, and for this inclusion it excludes English. But the inclusion of German, apparently, can only be obtained by the extinction of French. This is hardly likely to be easily effected.

At the distribution of prizes at Portmadoc County School, the headmaster claimed that it was contrary to facts to say that the secondary education systems of other countries was superior to the Welsh system in scientific training. It was an exception in

Germany to find in towns of the size of Portmadoc secondary schools so thoroughly equipped for practical scientific training as were the Welsh Intermediate schools.

MR. ISSARD DAVIES has introduced a proposal to the Carnarvonshire Education Committee for the opening of "all elementary schools in the county, between 9 and 9.45 a.m., for the purpose of religious instruction, denominational or undenominational, according as shall be determined in writing by the parent of each child attending such schools; the cost of such religious instruction to be defrayed by the person or denomination so determining." This is in view of the offer and acceptance of non-provided schools of the Bontnewydd Concordat.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Half-hours with Modern French Authors. Second Part. By J. Lazare. viii. + 191 pp. (Hachette.) 2s.—A good selection of prose and verse passages from many modern authors, giving excellent practice in unseen translation. The editor has added only four pages of notes, which give by no means all the information that might be expected. Thus not one of the many proper names on pp. 152, 153 is referred to in the notes. The vocabulary is altogether incomplete.

Des Vacances à Paris. By Violet Partington. 79 pp. (Marshall.) 1s. 6d.—A delightful tale, sure to please children, and especially little girls. The conversations and descriptions are alike bright and natural, and the book is rendered still more attractive by a number of full-page illustrations. The notes consist of idiomatic renderings of phrases which may give difficulty to the young learner.

Lectures Scientifiques. By W. G. Hartog. vii. + 321 pp. (Rivingtons.) 5s.—The University of London wisely insists that candidates for a degree in science shall be able to read and understand French and German scientific writings. For these and many others engaged in the study of science this book will be most helpful. It contains well-chosen extracts from standard French books on chemistry, physics, mathematics, physiology, and botany. There are no notes, but a glossary of technical terms is given. The book deserves a good sale.

A. de Musset, Fantasio; Il faut qu'une porte soit ouverte ou fermée. Edited by W. F. P. Prior. 75 pp. (Blackie.) 8d.—An edition of these charming plays is welcome, and Mr. Prior has supplied good notes and a brief Introduction, in which he credits de Musset with a work entitled "Numuona." Can he mean *Namouna*?

Les Misaventures de Jean-Paul Choppart. Edited by L. von Glehn. viii. + 170 pp. (Macmillan.) 2s.—These "Misadventures" make decidedly amusing reading, and Mr. Siepmann is fortunate in securing the text for his popular series. The notes are a thoroughly conscientious piece of work, particular attention being devoted to grammar. The vocabulary is practically complete. There are the usual appendices, with words, phrases, and passages for retranslation.

The Illustrated French Grammar. By G. Loly and L. J. F. Goujon. viii. + 159 pp. (Relfe.) 1s. 6d.—This grammar combines a few features of the newer methods with many of the old. There are the old disconnected sentences for translation into French with vocabularies to each lesson, and also pictures representing French scenes and conversations based on them.

Attention is paid to the pronunciation, but no use is made of phonetics. The type is not uniformly good, and in parts far too small. The vocabulary is incomplete.

About, La délivrance de Schultz. Edited by F. B. Kirkman. vi. + 46 + 4 pp. (Black.) 9d.—This forms the second part of "Le Roi des Montagnes." It is well edited by Mr. Kirkman, who supplies French and English notes. Doré's amusing illustrations add to the interest of this edition.

Advanced Course of Object Lessons in French. Book III. By A. Cran. viii. + 112 pp. (Nelson.) 1s. 6d.—Mr. Cran's earlier volumes are well known, and have done good service. The third part is for more advanced students, and contains dialogues of some difficulty, which deal with life in town and country, means of communication, interesting buildings in Paris, &c. The book is well illustrated and very attractive. The vocabulary is not complete.

Classics.

Murray's Small Classical Atlas. Edited by Dr. G. B. Grundy. xxiii. pp. + 14 maps. (Murray.) 6s.—We have from time to time noticed the issue of some excellent contour maps of the ancient world by Mr. Murray; and we welcome this school atlas based on the same principle. In these maps, three colours are used to mark areas from sea level to 600 feet, from 600 to 3,000, and from 3,000 to 9,000, the formation of the land being thus clearly distinguished. Of course, for more elaborate study a greater number of colours would be needed, but these suffice for school work well enough. The maps are clearly printed, and the book has a good index. Dr. Grundy has first-hand knowledge of topography, and has himself surveyed Platea, Pylos, and other ancient battlefields, which, together with Troy and Trasimene, Cannæ and Carthage, Actium and Salamis, Marathæon and Mycale, Syracuse, Trebia, Thermopylae, and the Caudine Forks, appear on plate xiii. We are specially grateful for maps showing the Roman empire at various dates, ancient Rome at various dates, and the Propontis. The others are: the empires of the Babylonians, Medes, Persians, and Lydians on one plate; Britannia, Hispania, Gallia, Danubia, provinces of Rome; Italia, Egypt (with Rome and Latium, and the Forum), Græcia, Aægean Sea (with Athens, Piræus, Acropolis, and Propontis inset), Asia Minor, and Palestine. It is a cheap and good book.

Latin Composition for Secondary Schools. Based on Cæsar and Cicero. By Dr. Benjamin d'Ooge. Part I. xii. + 131 pp. (Ginn.) 2s. 6d.—This book presents the elements of Latin syntax in order, accompanied by exercises based in vocabulary on Cæsar's "Gallic War." The arrangement is good, the explanations fairly clear, but vitiated by the American love for tall talk. Is it not better to say *indirect statements* than *declaratory sentences in indirect discourse*? and that is the style of the section-headings. Attention is paid from the first to the order of words and the effects of a changed order: a good point, but better brought out by quick play of question and answer than in any other manner. We think that Mr. d'Ooge has caught a glimpse of the proper method of teaching a language, but that he is still in thrall to the delusion that the written word is the basis of language. Oral exercises are added as an adjunct, when they ought to be the basis. Of its kind, however, the book seems to be good, and it will certainly be useful as a companion to Cæsar for teachers who have not confidence in their own powers.

Lucian: Charon and Piscator. Edited by T. R. Mills. 125 pp. (Clive.) 3s. 6d.—There is no need for this edition: but we are glad of anything which will assist the study of

Lucian. The Introduction is good and sensible; the notes of the usual elementary type. "Adverbial accusatives" ought not to be pointed out; nor the retracted accent in *πέρη*; that *ἀξίω* is a substantive in the phrase *κατ' ἀξίω* should be discovered by the pupil; and there are many such notes. On the other hand, something more is needed on the construction of *εἰ οἷδ' ὄρι* (p. 44), especially as contrasted with *οὐκ οἷδ' ὄρι παθῶν* (p. 104.) The notes are intended for learners who have no competent guide, and they succeed in conveying much information to such persons.

Florilegium Tironis Græcum. Simple passages for Greek learners, chosen with a view to their literary interest. By R. M. Burrows and W. C. F. Walters. ix. + 271 pp. (Macmillan.) 4s. 6d.—This anthology is original in plan, as its title shows; and in execution, since the editors have ventured to simplify by alteration or omission in order to bring the book within the powers of students not very far advanced. The dialect, however, has not been interfered with. The book is undoubtedly more interesting than most books of this class; although it would be impossible to get a connected idea of the works represented from the extracts alone, an aim which seems to be in the minds of the compilers. It is possible, however, to get a very fair idea of the general style of these works and their authors; and supplemented by a teacher's comments, might do much to satisfy the student's desire for knowledge. Both poets and prose writers are used, and most of the extracts are interesting, apart from their context. When, if ever, education is arranged on a reasoned plan in this country, we suspect that books of extracts for unseen translation will disappear, the pupil using for this purpose portions of the author he is reading for the time, whose text he will have complete; meanwhile the *Florilegium* deserves a trial, and it will be found good of its kind.

Dent's Wall Pictures for Teaching Latin. Four coloured pictures enlarged from the First Latin Book. *Romæ, Sexti Domus. Romæ, Triumphus. Pompeiis, Ostium, Tabernæ et Via Strata. In Gallia, Proelium Equestre et Pedestre.* Unmounted, 2s. net each. Mounted on linen, 3s. net. Mounted on linen and bound at edge, with rollers, 5s. net.—These pictures are imaginary, but will form a useful aid to teachers if used with a small class. For an ordinary class-room, however, they should be double the size. The drawing is poor, and the details slurred; and it is not easy to see how they are meant to be used, for they do not tell a story, and they are not good enough for ornaments. They can be used, however, with a small class, as we have said, for a similar purpose to those which are used in modern-language teaching: the teacher questioning in Latin, the class answering as to the meaning of the whole or the parts. The two houses are the best of the four, since there is more authority for the details. The battle is a vague and shadowy thing. Messrs. Dent would do well to revise the Latin of the description published in their catalogue.

A Synopsis of Roman History to 138 A.D. By W. F. Mason and J. F. Stout. 93 pp. (Clive.) 2s. 6d.—This is a full and careful summary, interleaved. It will, we think, prove very useful to students in revision.

English.

Milton's Areopagitica. By H. B. Cotterill. xlii. + 118 pp. (Macmillan.) 2s.—Mr. Cotterill has admirably succeeded in this book in accomplishing an edition of Milton's most famous prose work which exactly achieves the ideal he has had before him. He has tried, in a word, to make the "Areopagitica" available for the ordinary student who does not want to wrestle

and grapple with all the elaborate though exact scholarship expended upon it by Prof. Hales. Consequently, we are spared many philological and grammatical disquisitions, and a further advantage is obtained by the adoption of modern spelling. It will be seen at a glance, therefore, that this book supplies a want, and Mr. Cotterill's scholarly skill in editing other works of Milton is a guarantee for its excellence: a reader who works through it will at least finish its perusal with a complete understanding of Milton's arguments, and probably a correct appreciation of his sentiments. The introduction is full and excellent. The notes are what we are already accustomed to in all volumes of this series; and the chronological summary is beyond praise.

The Sonnets of Shakespeare. By Prof. Beeching. lxvii. + 145 pp. (Ginn.) 3s.—Among the many editions of Shakespeare's sonnets which have been done by well-known writers, this will, we think, at once become indispensable to serious students of them. It is emphatically a student's edition, and the scholarship of Prof. Beeching was never more happily applied than when he set about preparing it. It is thorough in a marked degree, and the author's handling of the theories extant about these sonnets is the most complete examination in existence. Concerning the vexed question of the date of this wonderful collection of gems, Canon Beeching has a theory of his own. It is undoubtedly one of the strongest that has been put forward. The notes are full, learned, and elaborate; and with extreme generosity Prof. Beeching gives all preceding annotators quite as much credit as is their due, if not more, while he adds substantially to all that has been previously contributed to the elucidation of the problems connected with Shakespeare's sonnets. Altogether an edition which represents the high-water mark of scholarship in this subject.

Scott's Ivanhoe. By P. L. MacClintock. xxiv. + 530 pp. (Heath.) 2s.—Editions of this novel multiply apace, and it cannot be said that this one has any pre-eminent merits; but it is a reasonably good one, and in the matter of the plans, maps, notes, and glossary merits praise. The introduction is a slight piece of work, but that portion of it which deals with the germ and evolution of this celebrated work deserves attention—and credit.

De Quincey. By H. S. Salt. 112 pp. (Bell.) 1s.—Many people are aware that there was, once upon a time, a writer called De Quincey. Some know that he ought to be called a great writer; and most people remember to his discredit that he took opium, and think and know much less of him than he deserves. In this volume De Quincey's whole career, personal and literary, is sketched by a writer who has great sympathy for his subject, and has command of a persuasive and engaging style. The impression of intrinsic greatness in De Quincey himself is the final result to be gained by reading Mr. Salt's pages. The critical portions of this book are extremely well done, and the illustrations are decidedly interesting. The book ought to circulate very rapidly and widely.

Archbishop Trench on the Study of Words. By Dr. A. Smythe Palmers. vii. + 258 pp. (Routledge.) 2s. 6d.—A new edition of this celebrated series of lectures has been no small want of recent years, and in setting Dr. Smythe Palmer to the task the publishers have done excellently, for the result is an elegant and useful volume. We should like to call attention to the word "Divisions" on the sixteenth line of Dr. Palmer's preface. Even when one Doctor of Divinity is editing another a mistake of that kind ought not to be passed, especially when concerned with a book so well known as the celebrated treatise of Horne Tooke. The editor has left the Archbishop's text and notes as

he found them; but he has added a large number of annotations, and, with an independence of mind which we think justifies itself by his remarks, he even in one place falls foul of the "New English Dictionary." These pages carry us back to habits of thinking which are, to say the least, out of fashion.

Johann Wolfgang Goethe. By H. G. Atkins. 180 pp. (Methuen.) 3s. 6d.—There is much to praise in this small but eminently readable life of a great man who is more misrepresented and misunderstood in this country than probably anybody of world-wide reputation except Voltaire. Mr. Atkins has done his work well, and presents a clear picture from which very few things have to be removed by those who know and admire the subject of this book. There is nothing in it that is new, naturally enough; but it is excellently put, and the estimates are eminently fair. Mr. Atkins makes Goethe a much better person than puritanical opinion thinks him to have been; but he has ample reason to do so, and any unprejudiced reader is likely to agree with him.

Erasmus's Praise of Folly. 126 pp. (Blackie.) 8d.—It is by no means a bad idea to put this little but wonderful treatise on the market in this handy form. Only once of late years has it been republished, and then in a large and not very manageable edition. This one will go into the pocket. Dr. Rouse prefixes a very brief introduction, and there are no notes; therefore, a great addition to a purely literary collection may be made by purchasing this volume at its almost nominal price.

History.

Little Arthur's History of England, by Lady Callcott, of which a new edition has just appeared (xviii. + 293 pp.: Murray: 1s. 6d.) is too well known for us to do more than say it retains its old characteristics, and has two new chapters, bringing the history up to the end of the reign of Queen Victoria.

British History in Review. By M. MacArthur. 184 pp. (Blackie.) 1s. 6d.—Is a summary by periods to 1066, afterwards by reigns, but there are also special summaries of relations between Church and State, 1066-1603; between England and Scotland, 1066-1603; between England and Ireland, 1066-1714; and others of our Indian Empire, Colonial Expansion, the Growth of Constitutional Power, 1066-1714; and of the "Victories of Peace." The book is clearly printed, correct in facts, and will be found useful in class teaching.

Dictionary of Battles. By T. B. Harbottle. 298 pp. (Swan Sonnenschein.) 7s. 6d.—A short preface apologises for "printer's errors or varieties of spelling" by a reference to the recent death of the author. The book consists of short paragraphs on all the important battles in the world's history, as well as sieges, to which a name can be given, including even the current Russo-Japanese war. So far as we have tested it, we have found it correct.

History of the World. By Chas. Morris. 576 pp. (Lippincott.) 6s. net—The purpose of this book is to give the youthful student some little idea of what man has done upon the earth. . . . to pass swiftly down the great highway of history, pointing out its striking features as we went, but not stopping for a close survey of great deeds and great events." The result is a series of chapters on ancient history (Babylonian, Assyrian, &c.), followed by Greek, Roman, mediæval, and modern history. The story is told somewhat jerkily and out of proportion, but interestingly for the quite young reader. There is a wealth of illustrations of various degrees of merit, over a dozen good maps, lists of dates, and an index.

Geography.

Time Chart of the World. Patented by Edward Cowell. (Philip.) 6d. net.—Upon a sheet, about 12 in. by 6½ in. in size, having the twenty-four hour lines drawn upon it, the names of a number of places are given, the positions of the places being indicated by small spots. A strip of paper, having similar hour intervals, slides along the top of the sheet, and by placing any hour-mark on this time-strip at a particular time for any place, the time at the same instant for all other places of which the longitudes are given can be found. It would be a decided improvement to print an outline of the world on the sheet, so that the positions of the places on the continents can be seen. Mr. Cowell may not know that about a year ago the Diagram Company issued a small card by which simultaneous times could be determined by turning a dial inside a circle having places in various longitudes printed around it. A still better plan is to have two discs upon which the northern and southern hemispheres are represented pinned at the centre upon the upper and lower faces of a piece of card having a twenty-four-hour dial printed on each side of the card, just outside the edges of the discs. The two discs turn together upon the card, and thus represent much more effectively the result of rotation upon time of day than the method of a sliding time-strip on a Mercator's projection which Mr. Cowell has thought it worth while to patent.

Elementary Geography Reader, V. c. The Americas. By Prof. L. W. Lyde. (Black.) 1s. 4d.—The characteristics of this series of geographical readers have been enumerated before in these columns. There is descriptive matter of the familiar kind about the countries of America, and an abundance of illustrations. Many of them occupy a page, and some appear to have been included rather because they were available than because of the geographical information they impart.

An Atlas of the World's Chief Industries. Prepared under the direction of *Commercial Intelligence.* (Philip.) 2s.—The twelve maps on Mercator's projection, on which the statistics relating to the chief industries of the world are shown graphically included in this book, should prove of real assistance to teachers of commercial geography. The atlas provides abundance of good material for blackboard sketches, for the plotting of curves, and for other useful exercises. The publication deserves a wide circulation. It is a pity that the book is so badly bound that no use can be made of the middle parts of the charts.

Science and Technology.

Astronomical Discovery. By Prof. H. H. Turner. xii. + 225 pp. (Edward Arnold.) 10s. 6d. net.—The six chapters of this book contain the substance of that number of lectures delivered at the University of Chicago last August by Prof. Turner, Savilian Professor of Astronomy at Oxford. In the main the descriptions refer to the planets Uranus, Neptune, and the asteroid Eros, the aberration of light, nutation, the photographic star-chart and catalogue, new stars, the sun-spot period, and the variation of latitude. Most of the subjects are thus more than half a century old; and the merit of the book lies in the new light which Prof. Turner throws upon them. This is particularly the case in the account of the parts played by Adams and Le Verrier in the discovery of Neptune—the planet found by mathematics before it was seen—and that relating to Bradley's discoveries of astronomical aberration and nutation. In connection with the former discovery, Prof. Turner places the chief blame for the neglect of Adams's results upon Prof. Challis, who was Professor of Astronomy at Cambridge, but Sir George Airy's correspondence justifies the truth of the saying that "a

prophet is not without honour, save in his own country." The account of the discovery of the variation of latitude is told chiefly by extracts from Prof. Chandler's papers in the *Astronomical Journal*. It is a little disappointing to find in a book on astronomical discovery practically no reference to spectroscopic achievements, but this is probably because Prof. Turner preferred to confine himself to subjects with which he is more familiar. There are fifteen plates, but, with the exception of the portraits, most of them are inferior to what appear in the pages of many inexpensive text-books.

Special Method in Elementary Science for the Common School. By Dr. C. A. McMurry. ix. + 275 pp. (Macmillan.) 3s. 6d. net.—The teacher of science to the lower forms of secondary schools will find this book interesting, inasmuch as it indicates what an American writer considers to be a suitable course of work in science for elementary school pupils. Judged by the standard of teaching in the schools of this country, too much is set down as the work of single terms, and there is very little attempt in the last years of the course to give formal instruction in the methods of physics and chemistry. It is better, as a rule, properly to educate the teacher of science and to leave him to arrange his own course of work. Schemes of study imposed by outside authorities are apt to become wooden and uninspiring.

The New Matriculation Chemistry. By G. H. Bailey. Second Edition, rewritten and enlarged. 528 pp. (Clive.) 4s. 6d.—In order to emphasise still further the importance of experimental methods of study, the author has introduced into this edition an introductory course based upon a series of simple experiments designed to demonstrate the leading principles of chemical theory. The volume supplies successfully the requirements of the syllabus upon which it is based.

Nature Teaching, based on the General Principles of Agriculture. By Francis Watts and William G. Freeman. xi. + 193 pp. (Murray.) 3s. 6d.—In rural schools, where nature-study takes the form of an elementary course in the principles of agriculture, and school-gardens are available, this book will be found invaluable. The subject-matter has been carefully selected, so that a student working through it will acquire a sound knowledge of essentials, without being mystified by unimportant details and exceptions. The instructions for practical work are copious and precise. The first 100 pages are devoted to the study of the plant in general, then come chapters on soil, plant food and manures, flowers and fruits, and weeds. A final chapter deals with insect pests. A small number of very clear illustrations adds to the value of the book.

Physical Laboratory Manual. By H. N. Chute. Revised edition. 267 pp. (Heath.) 2s. 6d.—In this publication a few problems of the first edition (issued in 1894) have been omitted, and new ones have been added. Every problem has been carefully rewritten, and the tables of constants have been revised and extended. The volume forms a trustworthy guide for an elementary course of experimental physics.

Mathematics.

A School Geometry. Parts I-VI. By H. S. Hall and F. H. Stevens. xiv. + 442 + xii. pp. (Macmillan.) 4s. 6d.—Parts I-VI, now combined into one volume, have been noticed as they appeared; in its completed form the book will commend itself especially to teachers who, while willing to give some scope to practical geometry and to take advantage of various relaxations as to order and methods of proof, are still inclined to keep within limits their divergence from the Euclidean standard. For practical purposes the course of geometry as here presented will probably be found amply sufficient; the exercises are for

the most part simple and well chosen, and all necessary help is given to the pupil. The question remains whether something should not be attempted to sketch the general lines of development so as to indicate clearly the rôle of the axioms and postulates; in other words, to indicate to what extent, if any, geometry may be considered as a science founded on experiment or as a system of truths deduced from assumed definitions. For bright pupils such a discussion would be of the greatest interest. It would also be in place to take up the theory of proportion and the method of limits so as to complete the treatment of these important instruments of geometrical demonstration. We are confident that it would be of great advantage both to teacher and to pupil to enter on such an investigation as we have suggested; at the end of a course like that laid down in this book the pupil's reasoning powers should be sufficiently developed to make this discussion possible.

Clive's Shilling Arithmetic. viii. + 154 pp. (Clive.)—This book consists mainly of rules and sets of exercises, both for oral and for written work. The general arrangement is that adopted in the other arithmetical text-books of the Tutorial Series, and the exercises are sufficiently numerous and varied for the ordinary needs of a school. Teachers who prefer that their pupils should have no aids to the comprehension of the theoretical foundation of arithmetic, except such as are given in oral lessons, will find the book adapted to their requirements; whether instruction in theory can be adequately given by oral lessons alone is a question which need not be discussed here.

The 'Council' Arithmetic for Schools. Scheme B. Part I. By T. B. Ellery. 46 pp. (Black.) Paper covers, 2d.; cloth, 3d.—An excellent little book, thoroughly adapted to the needs of beginners. Tables are given on the inside pages of the cover.

Elementary Algebra. Part II. By W. M. Baker and A. A. Bourne. vii. + 277-468 + liii.-lxii. pp. (Bell.) 2s. 6d.—Part I. of this algebra has already been noticed in THE SCHOOL WORLD (vi., 359), and the features referred to in that notice are even more clearly marked in this part. The strength of the book lies in the exercises; these are numerous, varied, and not too difficult, and provide ample practice in algebraic work up to the exponential series. Graphical work has also a place, but we are inclined to think that too much attention is given to the solution by graphical methods of problems that are better treated by ordinary algebra; many of the problems might have been omitted to leave room for a fuller discussion of the graphical solution of equations. The weakness of the book lies in the discussion of principles. Chapter xxxiv. is very inadequate, considered as a discussion of the Laws of Algebra. The proof of the theorem of Art. 208 and its extension in Art. 334, though often found in text-books, does not seem to us to be satisfactory. While the use of the binomial theorem for fractional and negative indices may well be explained for the sake of its practical importance, any attempt at proving the theorem should be postponed to a later stage; such proofs as are given of that theorem and of the exponential and logarithmic theorems are of no real value, and the difficulties are not to be overcome by a note like that on p. 437. The algebra can be thoroughly recommended for its examples, worked and unworked, but it is, in our judgment, decidedly weak when considered as an exposition of the principles of algebraic reasoning.

Mathematical Problem Papers. Compiled and arranged by E. M. Radford. vi. + 203 pp. (Cambridge University Press.) 4s. 6d. net.—This collection is intended primarily for the use of candidates for Mathematical Entrance Scholarships at Oxford and Cambridge. The book is divided into two parts, each containing fifty papers; each paper contains questions on the

usual scholarship subjects, the second set including also questions on the Theory of Equations and the Differential Calculus. Many of the questions are stated to be original, the rest being drawn from papers set at various examinations. Candidates for any mathematical examination in which the work is akin to that of the Scholarship Examinations referred to will find the collection very serviceable as a test of their knowledge; the questions are of the kind that figure in these examinations, and are sufficiently hard even for the good student.

Miscellaneous.

The Schoolmaster's Yearbook and Directory, 1905. lix. + 500 + 558 pp. (Swan Sonnenschein.) 5s.—Though the first issue of this yearbook appeared only at the end of 1902, it has already become indispensable to all educational workers. Bulky as the volume was last year, this issue is still larger, and the editor will do well to consider how its size may be kept within reasonable limits without decreasing its usefulness. Most educationists would probably most willingly dispense with the sections entitled "Publications" and "Bibliography," since this information is necessarily incomplete and may be obtained elsewhere. After having consulted the yearbook continuously since its first appearance, we are able heartily to recommend it to our readers as a trustworthy work of reference, and to congratulate the editor upon the success of his labours.

The Public Schools Year-Book, 1905. Founded by Three Public-school Men—Eton, Harrow, Winchester. lxiv. + 623 pp. (Swan Sonnenschein.) 2s. 6d.—This is the sixteenth year of publication of an annual we are sure comes each year as "a boon and a blessing" to parents. The well-arranged information about preparatory and public schools contained in the volume is just what the anxious parent wants who wishes to know where to send his boys to be educated.

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 Teaching of Dynamics in Schools.

I VENTURE with the greatest respect to question the value for schoolmasters of some of the contentions of Prof. Minchin in his important article on the "Teaching of Dynamics in Schools" (THE SCHOOL WORLD, vol. vi., p. 446).

(a) Prof. Minchin holds that experiment should not precede theoretical teaching, but should be used as often as possible to verify the "anticipations" of the latter. These anticipations are to be based, apparently, exclusively on Newton's Axioms, but Prof. Minchin unfortunately does not deal with the question of the derivation of these axioms—a question not only of the highest intrinsic interest, but (like the cognate one of the origin of the axiom of parallels in geometry) of the greatest importance to the teacher. Only two hypotheses seem possible: either the origin of the laws of motion is purely subjective like intuitions of space in the Kantian philosophy, or else it is to be found in our experience. In the earlier days of the science the former was a view widely held, and led to such results as Descartes' deduction of the formula $\sum mv = \text{const.}$, from considerations of the perfection of God. Such a derivation of laws of phenomena would hardly be accepted anywhere nowadays, and it is probable that Prof. Minchin would admit Thomson and Tait's statement,

that "these laws must be considered as resting on convictions drawn from observation and experiment, *not* on intuitive perception." If this is the case the boy who uses his experiments to verify the anticipations of theory must, at least in the earlier stages of his progress, base his anticipations solely upon the experience and "convictions" of others. In advocating for boys a method of teaching which implies this result, Prof. Minchin appears to me to countenance with his great authority the pedagogic mistake which has already cost us so many tears. Why have we agreed lately to allow "experimental geometry" to precede the formal development of the subject from definitions and axioms if it is not because we have found how ineffectively the average boy deals with concepts which he has not abstracted from genuine geometrical experiences of his own, and have recognised that we cannot leave it to the ordinary chances of life to bring him at the best time and in the best manner into contact with the facts from which as data our teaching proceeds? *Mutato nomine*, I think that the same holds good in mechanics. I hasten to admit that the *ideal* of the physical sciences is to "anticipate" the innumerable particulars of experience by deductive inference from "axioms" directly based upon as small an empirical foundation as possible; but the moral of this is (as Alice's Duchess used to say) that we ought to train our pupils for their full inheritance of the long results of time by deductions that may have at first the "scrappy and practical" character which Mr. Child admits in Elementary Geometry (THE SCHOOL WORLD, December, p. 468), and only gradually become systematised. In short, for the schoolmaster, the complete deductive system is the *terminus ad quem*, not the *terminus a quo*.

I would contend, then, that, although experimental work in mechanics may with the greatest advantage be made to serve the purpose which Prof. Minchin allots to it, yet its really indispensable function is one which he does not recognise. This function is to supply the motive for the introduction and development in our teaching of those concepts and laws which have no significance apart from the mechanical experiences which it is their business to summarise and to interpret. I am rash enough even to confess my belief that the *concept* of the moment of a force should be reached by the class from an experimental study of the lever, theoretical elaboration being subsequent and based on the recognition of the parallelism between the properties of moments and the geometrical properties of vector products. I will add that I do not think that this use of experiment lies open to the censure which Prof. Minchin so justly gives to certain forms of "practical work."

(b) Equilibrium may be *logically* only a particular case, presenting no more simplicity than the state of motion; but the history of science (a useful if not infallible guide) suggests that the circumstances of equilibrium of solids and fluids are capable of scientific analysis and statement at an earlier stage of development than the circumstances of motion. Elementary statics, in fact, *need* employ the notion of force only in its most familiar case—weight; and need not attempt at all the definition of the remote and difficult idea of mass, which stands at the beginning of a system of dynamics based on Newton's Second Axiom.

(c) Finally, I would appeal to teachers to pay attention to "Newton's reiterated and emphatic protestations that he is not concerned with hypotheses as to the causes of phenomena, but has simply to do with the investigation and transformed statement of *actual facts*." (Mach's "Science of Mechanics," second English edition, p. 193.) The analyses of the origin and import of the conceptions of mechanics which have been carried out by men who are at once competent mathematicians and competent epistemologists—such as Mach and Poincaré, on the Continent, Prof. Karl Pearson and the Hon. Bertrand Russell in England—have rendered obsolete the conception of a "science of force,"

if by that term is understood a physical entity manifesting itself in so-called effects and not "a mathematical fiction" (Russell, "Principles of Mathematics" section 455) of service only for the concise "resumption" (in Prof. Pearson's phrase) of observed facts. Were any external confirmation of their results necessary it would be furnished by the dynamics of Hertz, who found it possible to elaborate principles of mechanics from which the notion of force is entirely eliminated. I venture to urge that no changes in the methods of teaching mechanics can be really satisfactory that are not largely determined by the acceptance of results that "physicists nowadays will scarcely deny" (Russell, *loc. cit.*).

T. PERCY NUNN.

My remarks on Mr. Nunn's letter on the teaching of dynamics must be very short:—

(1) I do not admit for a moment that the great name of Newton is either "the chief obstacle" or any obstacle whatever in the path of reformers in mechanics. In one respect Newton and Euclid occupy the same position: no one has ever called in question the validity of any one of Euclid's demonstrations, and no one has ever discovered a physical fact inconsistent with Newton's Axioms. In another respect their positions are quite different. Euclid laid down a particular set and sequence of propositions in geometry: the collection of propositions is not admitted to be the very best, and the sequence also admits of improvement. Newton, beyond laying down the smallest possible number of independent axioms, has not in any way dictated our procedure in the development of dynamical science.

To imply that it is desirable to replace Newton's Axioms by some other foundation of science seems to me to be about the same thing as contending that the earth has had its old equator long enough, and it is high time that it got a new one! I have seen some suggested substitutes for Newton's Axioms. When they are not wrong, they end in a mob of hypotheses. I think, therefore, that treatises based on the Principia will "meet the needs of the Schoolmaster," and of everyone else who has to teach dynamics.

(2) That the sciences "are best taught by methods which reproduce in the individual the main features" of the historical processes is a principle which must be applied sparingly, owing to the limited duration of human life. It is to a certain extent sound, and it can, on occasion, work out in a most interesting way; but it cannot be held to justify, for example, the teaching of the art of shipbuilding to a modern workman by making him construct a prehistoric "dug out," a celtic coracle, and other forms of floating bodies, before he sets to work at an ironclad.

(3) My objection to putting pupils through a preliminary course of experimental work in dynamics before they learn the various principles deducible from the parallelogram of forces is, in plain English, that there is not a sufficient body of such experimental work to be done—*unless we pile up before the pupil a heap of phenomena having no quantitative scientific connection with each other, and constituting a most insecure foundation of knowledge.* Such a procedure is very dangerously akin to *cram*—to that want of thoroughness which is the main characteristic of our modern scientific teaching, that slipshod presentation of mathematics which renders some recent treatises on "Practical Mathematics" the most unsafe guides that can be put into the hands of a student.

I have already illustrated such work by the example of an oscillating disc. Let me take another which, I think, finds a place in elementary practical dynamics—viz., the rolling of a ball down a rough inclined plane. The beginner is entirely unable to understand why the centre of the ball is uniformly accelerated, and why the motion will not be the same for a solid as for a hollow sphere or cylinder. On the other hand,

when this experiment is placed where I should place it, the student is able to appreciate all the dynamical principles involved: the various facts of the case are not an unconnected set of phenomena, which it must be difficult to remember, but a series of facts bound together by a few fundamental laws.

(4) I do not propose, by any means, to run statics and kinetics concurrently *all through* a course of study. I know that, after a certain amount of progress has been made, the latter branch must be dropped for a time on account of the increasing demands which it makes on the mathematical knowledge of the pupil; but I maintain that they should have the same foundation and run together until the treatment of bodies of considerable dimensions is undertaken.

(5) I do not think that we are called upon to decide whether *force* is "a physical entity manifesting itself in so-called effects" or "a mathematical fiction of service only for the resumption of observed facts"; but I do think that the people who try to simplify our ideas on the subject by asking us to regard "energy" as the objective reality, and to regard "force" as "space-rate of variation of energy," are not in the least simplifying the matter. The science of force is to me the science which binds together phenomena expressible in terms of M, L, T ; and, when we get to the bottom of these fundamental and independent conceptions, we shall be in a position to decide about the nature of force.

GEORGE M. MINCHIN.

In an able article on the above subject, in issue for December last, Prof. Minchin has dealt with the need for reform, and has indicated some of the changes proposed by the Mathematical Association. May I venture to suggest that, so far as can be gathered from the article, the reforms do not seem to go far enough in some directions. Why is it still considered necessary to retain the Newtonian mode of dealing with force? The principle of inertia can be stated and discussed without introducing the notion of force. In fact, this notion implies previous recognition of the principle, and force is simply an imaginary cause of acceleration. What, then, is the use of turning the definition of force upside down and calling it a "law," or even an "axiom?"

Moreover, force, on account of its nature, admits of measurement only by observation of its effects, and is, in fact, put proportional to the accelerations produced in a given body. Why not say so, and proceed with the subject? Instead of this, the statement of the mode in which force must necessarily be measured is inverted and called "Newton's Second Law," and much time is often wasted in discussing means of "verifying" what, presumably, is supposed to be a law of nature.

The fact that force is reckoned proportional to its effects may be represented at once by the equation $f = ka$, where k is a constant for the *particular* body whose motion is considered. The value of this constant may be arbitrarily defined to be unity for any body we choose. For example, a body exactly similar to the standard pound may be taken, and the "preposterous poundal" is then fixed by the above equation. It is easy then, but not before, to give a perfectly intelligible meaning to "mass." The strict dynamical idea of weight easily follows, and the absolute unit of force may be replaced for practical purposes by the gravitation unit, in terms of which the forces can actually be determined. There need not be any danger of the absurd use of the poundal to which Prof. Minchin refers. This method of treatment is easily understood by students, and the desirability of attempting some sort of logical order in presenting the subject will be acknowledged by all who have had experience of the hopeless confusion caused by the pretence of defining mass to be "quantity of matter."

Ulverston.

T. J. GARDNER.

The Place of Arithmetic in Primary Education.

SEEING that the study of arithmetic has always held a prominent place in the school curriculum, some slight enquiry into the reasons given and accepted for that inclusion may possibly be of interest. A comprehensive glance at the history of the subject shows that these reasons have not always been the same, but, on the contrary, that they have changed in a most radical manner. It is generally conceded that they are two in number, the usefulness of an arithmetical training *per se*, and the value of that study as a training for the mind. It is in the comparison of the relative values of these reasons that opinions have been and remain at variance. There are those who still insist that to equip a boy in order that he may be able successfully to grapple with the practical problems in calculation which he may meet in his after life is the sole *raison d'être* of an arithmetical education. On the other hand, an equally strong section of educationists claim that it is in the mental discipline and training involved that the value of arithmetic alone is to be found. Socrates and the mathematicians of ancient Greece held the latter view. Cocker and Colenso filled their treatises with a multiplicity of cumbrous commercial rules. We to-day are endeavouring to return to the older idea but are still hampered by many conventional methods. We should grasp the main idea that examples are not an end in themselves but merely a means for the fixing of the great principles in the child's mind.

It cannot be denied that speed and accuracy of calculation are substantial assets to a man engaged in any business, and even the most mechanical performance of arithmetical operations must involve some mental training. There can, however, be no comparison with the faculty-training afforded by the intelligent study of arithmetic. Indeed it gives to the primary schoolboy some of the advantages which his more advanced brother obtains from the higher mathematics. To obtain the full value from the study of the subject the boy must first grasp intelligently those great bed-rock axioms on which the whole structure has been built up. In no other subject can we be so sure of the truth of our primary principles nor can we be so confident of their stability throughout all time. Our belief in the integrity of atoms may be shaken by the behaviour of radium, and we cannot always definitely divide animal and vegetable life in the lowest degree, but no new discovery can shake the axiom that "the whole is greater than its part." These are the foundation stones—on them he should be led to build storey upon storey, taking nothing for granted until he has erected a fabric which is impregnable, and in constructing it he will have submitted his mind to a training which will benefit him, whatever his future calling. This surely is a higher ideal than the mere successful accomplishment of difficult rules and problems.

Practical teachers will ask, "How is this grand ideal to be reached?" In this small space a scheme cannot be detailed, though a few general ideas may show how existing schemes may be utilised to greater benefit. The child should take nothing for granted—and the teacher must never in this subject speak *ex cathedra*. Generalise whenever and wherever possible, using other scales of notation, other units, and occasionally letters in lieu of figures. Let all methods be clearly understood and eliminate all such hocus-pocus as "turn it upside down and multiply." Never let children memorise a table till they have previously built it up for themselves. As far as possible, the various rules should be taught not as separate detached units but as component parts of a great whole.

By these and like means we may raise arithmetic from the somewhat equivocal position it at present occupies and make it as educational a study for the boy in the standards as the higher mathematics is to the advanced student.

P. ALDER-BARRETT.

Dramatic History.

It has been stated that a knowledge of the mere facts of history is of less use than an acquaintance with the recipes of a cookery book. Without pausing for a closer consideration of this statement, is it not increasingly recognised that the chief work of the educator lies rather in the creation of the imaginative background, the atmosphere, so to speak, than in the imparting of knowledge however valuable; and that, until a "feeling" for a subject exists, all concerning it is but superficial, having neither part nor lot in the real life of the child?

Many and varied "atmospheric" (if I may be allowed the term) expedients must suggest themselves to the enthusiastic educator, especially in connection with the subject in hand. Indeed, I only venture to describe a simple experiment I recently carried out (which I had seen tried before on somewhat different lines) in the hope that I may learn something of the experiences of many who, like myself, are interested in this particular aspect of our work.

I had a Third Form of fifteen girls who for two terms had studied, and waxed eloquent, as that age does, over the misfortunes of the Stuart Kings. In the third term I proposed that, dividing themselves into groups of two and three, they should write and act a few scenes illustrative of the period. I suggested a few suitable ones, and some methods of arrangement, and read and re-read various descriptive passages. Of course there were limitations, the most important being that real personages must not be introduced, but the characters must represent people living at the time, who should speak, as far as possible, the language of the period. Great enthusiasm and energy was displayed, and, after a few criticisms and some necessary correction of errors, I found myself standing aside, the interested spectator of various "mental adjustments" going on around.

A few brief quotations will best show the nature of the work done.

SCENE : A House in London.

CHARACTERS.

Princess Elizabeth } Children of Charles I.
Prince Henry }
Sir Walter Selby A Courtier.

Nurse.

Nurse. Oh, deary me, what shall I do! Here's my dear Princess nearly dead with grief because of her father. But the Prince, poor little soul, he doesn't understand it all. I wonder what has happened to our King? . . . I sadly fear that wicked man Cromwell will not rest until he has made away with the King. Here comes Sir Walter Selby.

Sir Walter. Hail, mistress.

Nurse (curtseying). Hail, sir.

Sir Walter. I bring sad news. His most gracious Majesty King Charles was executed on the scaffold a few hours ago.

Nurse. Alack, sir! What shall we do? Her Highness Princess Elizabeth will break her heart.

Sir Walter (sitting down). I know 'tis cruel to the poor children, but I would see them, nurse, for I have much to tell them.

Nurse. I will bring them, sir. (*Exit Nurse.*)

(*Enter Princess Elizabeth.*)

Elizabeth. Good day, Sir Walter; nurse tells me you have news of my dear father; 'tis sad, your face tells me so. . . .

Sir Walter (kissing her hand.) . . .

SCENE : A large room in Sir Robert Penler's house.

CHARACTERS.

Sir Robert Penler A rich merchant.
Henry Penler Sir Robert's son.

Sir Robert (looking up from reading a book). Hark! That

surely is my son's voice ; I hope he is disappointed in the new king.

(*Henry enters.*)

Henry. 'Twas splendid, father ; you ought to have been there to see the new king.

Sir Robert. James is Scotch and will surely favour Scotch friends. Scotchmen will be put over Englishmen, and English customs will be put aside for Scotch ones.

Henry. Nay, my father, I think thou art wrong there. James most likely will be tired of Scotland, and eager to please both Parliament and people, so that he will not be sent to Scotland to be an exile from the English throne.

Sir Robert. But consider, my son ! Who can do so much good for trade as Queen Elizabeth did ? Who will serve James as Sir Francis Drake and many others served the Queen ?

At last, in the last week of term, the headmistress, the staff, and the other forms were invited to a short entertainment in the Third Form room. A screen, an odd table, and a chair or two completed the scenery ; and a few head-dresses, including a velvet cap and feather, and an opera cloak, furnished the wardrobe. The eager, young actor-authors then went through their programme, displaying an originality in conception and execution which excited much interest and some amusement.

I have hopes that this particular period will, at any rate, be real to those children who, in their early teens, have just reached that intermediate age when deadening and conventionalising influences so often, alas, play their part in the mental life. If interest and enthusiasm are then allowed to die out, who will rekindle the altar fires ?

CLARA A. WARREN.

School Certificates as Leaving Certificates.

THE Consultative Committee of the Board of Education proposes a *junior* certificate for pupils of fifteen years and under, who have received not less than three years' instruction in a recognised school.

In the "Regulations for Secondary Schools" the Board of Education is mainly concerned with a "course of general instruction extending over at least four years" and ending at about the age of sixteen. This undoubtedly represents a section of the work of all higher schools, and the whole of the work of a certain class of schools. Why, then, institute an examination for a certificate at the age of fifteen ? The parent will think most naturally that when a child has obtained a junior certificate he has ended his school life. Give a certificate at fifteen, and many who might have stayed to sixteen will leave. If the junior certificate had no relation to age, but was a guarantee of a general education of one or other of a variety of types, it could be used as a leaving certificate by the type of school mainly contemplated by the Board in issuing regulations, and might become a powerful weapon to be used in inducing the parent to allow the child to finish the course.

With regard to schools in which education is continued up to eighteen or nineteen, the note struck by the Board in its regulations is much more uncertain. It looks upon such schools as "leading up to the universities." No doubt they do lead a few pupils to the universities ; but does not every master and mistress struggle to keep as many as possible, who are not going up to the universities, for this higher stage of education, because it is only at the age of about seventeen that the mind develops and can be led on to adult lines of thought. If the *senior* certificate were a leaving certificate for these schools of a higher grade, namely, schools in which education is carried on to the age of eighteen or nineteen, would it not be useful as a means of inducing parents to give their children this higher school education ? It would almost certainly be so in the case of girls. But

if it were a leaving certificate for this type of school it must recognise the specialisation of Sixth Forms.

St. Felix School, Southwold.

M. I. GARDINER.

The Text-Book in the Teaching of Science.

WITH the article in your November issue on the use of text-books in science classes I found myself in agreement to a limited extent. Living several miles from the school in which I work, I am left night after night with large piles of note-books to correct. To carry them home is out of the question, and no time is allowed in school hours for corrections. Even the dinner hour does not prove long enough for the task. In these circumstances it is the greatest relief to the over-worked teacher of science to provide his classes with text-books. It is especially helpful in a large class which is doing practical work, for some boys are sure to get the work done more quickly than the average boy of the class, while others lag behind. It is very difficult to keep the class together, since to do this means that the able boys are kept back, while the dullards are hurried over the work without properly understanding it. Thus the plan of explaining the work at the beginning of the period seems to break down.

There is, however, the great danger that the use of text-books should help the boy in his constant, though unconscious attempt to avoid the trouble of thinking for himself. In the first place, when a boy is using a book of instruction for practical work, it is very easy for him to carry out the instructions blindly without in the least understanding what he is trying to find out. I have many times gone up to a boy and asked him what he is aiming at in the experiment, to be met with the honest, if somewhat staggering reply, "Please, sir, I don't know." To avoid this I have tried the plan of making every boy write before he begins his work a clear account of what he is aiming at.

Secondly, when theoretical text-books are in use, there is the great danger that boys (sometimes in order to gain full marks) should read ahead and find out what results they are to expect in their practical work. The result is that the spirit of enquiry, in the excitement of which the value of practical work partly lies, is completely killed, while the effort of thinking out what the results of the practical work mean is evaded. This danger I see no easy way of avoiding.

Leeds Grammar School.

G. C. DONINGTON.

Registration of Teachers, Column B.

YOU are no doubt acquainted with the fact, sufficiently notorious, that the assistant-masters in the public schools and the larger grammar-schools have shown no great anxiety to get their names on the Register of Teachers. In view of the early expiration of the "days of grace," may I call your readers' attention to the following facts ?

In consequence of the passing of the Education Act, some modification has become necessary in almost every scheme governing any endowed school in England. However trivial the modification may be, if it only adds, say, a single representative governor, it gives the Board of Education the opportunity of adding whatever "clauses of common form" happen to be fashionable at the moment. Now, among the clauses in favour just now is one that runs : "The headmaster (to be appointed) shall be a graduate . . . &c., and shall be a Registered Teacher."

Thus it comes about that for the future practically no headmasters will be appointed to endowed or municipal schools in England who are not registered teachers, and so all secondary teachers of standing ought to see that their names get on the Register in the course of the next few months.

G. C. CHAMBRES.

A. Dumas, "Jacomo."

IN your number for last month there is a short notice of the little text which I edited for Nutt's Series of Short French Readers (A. Dumas, "Jacomo.")

The reviewer suggests that the old-fashioned spelling in such words as *ardens*, *haletans*, *confians*, should be dropped.

I venture, however, to think that he has overlooked the note on *fragmens* (p. 38), which explains how the *t* crept in during the sixteenth century, and which reminds the reader that the *Revue des deux Mondes* still adheres to the old spelling in this respect.

FRANK WALTON.

I HAD not overlooked the note to which Mr. Walton refers. In printing a sixteenth-century text it would be absurd to modernise the spelling; but in dealing with a nineteenth-century author I think it best to give the standard spelling of our day. We have to do all we can to ensure correctness of spelling on the part of our pupils, and deviations of this kind have an unsettling effect. I feel confident that Dumas himself would not retain this obsolete feature if he were alive and saw an edition through the press.

YOUR REVIEWER.

THE STUDY OF PEDAGOGICS BY
CORRESPONDENCE.

The School World Club.

BOOK FOR STUDY.

Essays on Educational Reformers. By R. H. Quick. (Longmans, 1902.) 3s. 6d.

WEEKLY DIVISIONS OF THE BOOK.

Week	I. Chapters I.-III. (inclusive).	Week VIII. Chapters IX. & X. } Chapter XVI.	Chapters XIV. and XV.
"	II. Chapters IV. and V. (inclusive).	" XII. Chapter XVII.	
"	III. Chapters VI.-VIII. (inclusive).	" XIII. Chapters XVIII. and XIX.	
"	IV. & V. Chapters IX. and X. (inclusive).	" XIV. Chapters XX. and XXI.	
"	VI. Chapter XI.	" XV. Chapter XXII. and Appendix.	
"	VII. Chapters XII. and XIII.		

Comments and Questions on the reading of Weeks VI., VII., and VIII., to be sent to the Editors on or before February 15.

SELECTED COMMENTS ON CHAPTERS VI.-X. (INCLUSIVE).

CHAPTER VII., Section 4.—The saying attributed by Marcel to Talleyrand, "*Les Méthodes sont les maîtres des maîtres*," is beginning now to represent the opinion of teachers themselves. The "unintelligent traditional routine" of which Quick wrote no longer satisfies many schoolmasters and schoolmistresses, but the growth of enthusiasm for improved methods is surely slower than it need be? Too much time and energy are given still to demands for larger salaries and more secure tenure. Teachers have not realised that if they seek first the Kingdom of Education, these things will be added unto them.—R. ROSEVEAR.

CHAPTER VIII., Sections 3-4.—There is some satisfaction to an ordinary schoolmaster in finding that a master in education like Mulcaster was very human, betraying all sorts of little failings. It would seem unwise to wait until one is perfect before engaging in educational research. Whatever his weaknesses, Mulcaster was as near a complete understanding of the

aims of education as any of our twentieth-century leaders. The more the old books on education are studied, the clearer it becomes that we have not improved much on Mulcaster's teachings.—A. TIMMINGS.

CHAPTER IX., Section 2.—It seems to me that most modern reforms could be included very satisfactorily under one of the headings given by Quick as characteristic of the "Innovators."

Section 5.—It is instructive, too, to learn that in Ratke's time just as now women took the lead in everything that promised to improve education.—H. A. WEEKES.

CHAPTER X.—Comenius ought to be better known to modern schoolmasters. He at least was a "practical" teacher talking of education. He cannot be disposed of as a mere theoriser, with only a small experience as a private tutor. Everybody agrees now with some of the principles for which Comenius fought, though he advocated them at the peril of his general well-being. It should prove a tonic to the dissatisfied dominie of to-day, who does as little as possible because he declares he is appreciated so inadequately, to read of the tribulation through which Comenius lived,—which, nevertheless, in no way interfered with his endeavours to establish education as a science. There seems to have been in the old masters of education the fervour of the prophets which made all striving worth while. They, at least, did not consider earnest enthusiasm to be "bad form."—A. T. SIMMONS.

Learning was never to be made a drudgery. Yet is not drudgery, or hard daily routine, one of the greatest helps to character formation, as well as to success in after life? Yet we try to eliminate it from all kinds of learning now-a-days. One sees model lessons most beautifully and clearly arranged, every attempt to make knowledge more capable of being acquired without effort. Surely this is a weak spot in our teaching. My pet theory is that three things are essential in education: (1) a healthy, and—so far as consistent—a happy, environment, both physical and mental. (2) Plenty of work, without overwork. I always try to instil into my pupils that a love of overcoming difficulties is a British characteristic. (3) A high ideal, which keeps growing as the pupil advances towards it.—L. MARION JONES.

NOTE.—The "Mutual Aid" column is held over until next month through want of space.

The School World.

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MARCH, 1905.

SIXPENCE.

THE TEACHING OF HYGIENE IN SECONDARY SCHOOLS.

BY C. E. SHELLY, M.A., M.D., &C.

Consulting Medical Officer, Hailebury College.

IT is not conceivable that the movement for securing a great national advantage by providing the rising generation with some practically useful knowledge of the laws of health should ignore the claims of all children save those who receive instruction in the primary schools. It may be admitted that their needs are great and immediately pressing; that the level of ignorance from which it is sought to raise them is too often a dangerously low one; and that the good results which their instruction may reasonably be expected to achieve should be proportionately great. But a need not less urgent exists in all schools. If the pupils of secondary schools start in life equipped with certain superior advantages which must accrue from the accident of having been born of parents better educated, in homes more healthy, and in an environment which unconsciously inculcates the practice of essentially hygienic rites too often lacking amongst those less fortunately situated, much more is also expected of them. As they grow up, these children of the better classes are looked to for examples of healthy living as individuals, and as the intelligent supervisors, instructors and legislators in matters hygienic for the people at large. For both classes, as for each member of them all, there is a like peril in the neglect of that first great commandment of the gospel of hygiene which points out the primary duty of learning how to be, and of becoming, "a good animal." But for the children of the so-called governing classes—or rather, for those who are responsible for their education—the responsibility is both heavier and wider. To do the right thing is a disciplinary axiom for the whole army of humanity, from the drummer-boy to the commander-in-chief; to know intelligently at least the essentials of why it is the right thing, how to do it, and how to distinguish the right way from the wrong, is a necessary item in the education of every officer of whatever grade.

And in the present year of grace it is somewhat disconcerting to be asked, for instance, by that ser-

viceable Frankenstein, the intelligent foreigner, What system of instruction in the laws of health is in force in your English public schools? To which the abashed but truth-loving native can only answer, "There is no system, and there is no instruction; the one thing which our children in the higher schools for both sexes are not taught is the nature of their own bodies and the care of their own health. We do something towards compelling the children of our labourers and our artisans to learn certain rudiments of this important science, from infancy. But to those who in after life will own the factories and the cottages, administer the estates, be responsible for the sanitation of villages, towns and cities, make and administer the sanitary enactments of the country, we do not teach, and we do not profess to teach, anything of these matters as a recognised and regular part of their school curriculum."

There is some excuse and there is some explanation for this anomaly; though neither will carry us much further now with safety, or satisfy the demand which has voiced itself so clearly. The innate British affection for soap and water and fresh air stood us in good stead during the earlier part of the international struggle for supremacy, as our coal measures and our beds of iron-ore served us in the earlier stages of commercial rivalry.

The British schoolmaster's belief in the saving virtues of personal cleanliness and out-door games has been more than justified by the achievements of schoolboys trained under the influence of such traditions; and while he must perforce give his adhesion to at least the theory of some definite instruction in the laws of health, he is at the same time confronted by serious difficulties at the outset of any attempt to give this practical shape as a recognised item in the school curriculum. How and whence can be obtained the time, the teachers, and the money for efficient instruction in yet another addition to the subjects which already crowd the list to repletion? When one dispassionately considers the way in which each hour of each working day in each school-term is accounted for, the answer to the first difficulty is, obviously, not an easy one. The working hours of the average schoolboy or school-girl, take them at what age you will, are now quite as long as is desirable. For many boys in many schools, again, "private tuition" encroaches still further upon the period nominally allotted to recreation. And most think-

ing people at least would rightly regard any proposal to rob the pupil of something more of sleep or exercise in order to teach him the rudiments of hygiene, as a sort of paradox run mad.

To the suggestion that this subject might replace one of those already taught, it is sufficient to point out that there is no approach to unanimity on the question as to which is to be abandoned, and no general admission that such a step is feasible. The only solution possible would seem to be found in securing the necessary time by—on certain days in the week, for instance—curtailing the length of the lessons in some of the older subjects, so as to secure an hour for dealing with the new one. By this expedient, and—in the case of the larger schools—by forming groups of junior and of senior pupils, it would be possible to arrange that each member of the school should receive instruction in the laws of health for one hour in each week, without increasing the tale of mental effort, without serious disorganisation of the educational programme as a whole, and probably without any real diminution of the intellectual output in other directions.

It may here be pointed out that a step such as that just contemplated is typically one of those most easily taken under compulsion. If the "wisdom of Parliament"—which was long ago described as something indefinable in any other terms, being quite apart from every other kind of wisdom—should decree that instruction in the elements of the laws of health *must* be accorded a recognised place and time in the education of every child attending a school, all schoolmasters and schoolmistresses would not only find themselves able to carry out the law to the utmost of their powers, but would be furnished with a complete answer to such parents as might—in the present state of things—object to this particular subject being made to occupy any portion of the time which they would prefer to be devoted to the acquisition of other branches of knowledge because these latter appealed to their own parental wisdom, as being of greater practical "utility." And in this respect, therefore, all schools would be placed in a position of absolute equality. In another direction, the problem would tend to simplify itself as time went on, for, in the course of a further two or three years at most, children entering the larger schools would have already received, in the preparatory schools, regular instruction in the rudiments of the subject, and the difficulties inherent in having to work with "raw material" of all ages would automatically vanish.

Fortunately, too, the subject is not in itself one calculated to impose any great or special mental strain upon the learner. Rather the reverse, indeed. To the young and healthy mind there are few things more full of interest in themselves, few which can so easily be made interesting in the teaching of them, few of which a fair elementary working knowledge can be so easily acquired by the average intelligence, as the simple facts and deductions regarding the details of "the house which each of us inhabits." The healthy child, fortunately, takes the existence of its own body as

a matter of course, and, childlike, is blind to the wonders of which it is compact. To open its eyes to the simpler facts which attend its own existence, and to the relations in which it stands to the world about it, is a revelation of profound interest. Every child has at heart more or less of that enquiring spirit which moved the great mathematician to enquire, in his earliest days as a colliery lad, "What is the go of it?" That which is interesting to learn is learned with relative ease, and is apt to be well remembered; and a knowledge of this subject, without entailing any tendency to morbidity, begets an unconscious respect for the learner's body; favours, both directly and indirectly, the intelligent maintenance of his own health and a reasonable regard for that of others, and so makes for better educational results in all directions.

The question of the teachers occupies a position which is, at the present moment, of even greater difficulty. Although the teaching of hygiene is to a great extent still optional in the case of primary schools, it is an officially recognised subject of instruction; and, as a necessary consequence, a number of the teachers in these schools have equipped themselves with some knowledge of the subject, and are in some degree practised in imparting it to their pupils. The system as it exists is in an admittedly rudimentary stage, it is true; but there is nothing approaching even this to be found in the secondary schools of the country. There exists, indeed, a certain number of teachers holding the Board of Education certificate in hygiene, and available for the service of secondary schools; but their number is too small, and their training has been for the most part too much a matter of "book-work," to make them equal to such an occasion. And while it would be possible to "mobilise" to-morrow, if desired, at least a skeleton teaching force to this end from the existing staffs of the primary schools throughout the country, not even on paper could this be done for the secondary schools, not, at least, to the extent requisite for at once meeting a general demand. There is, however, in their case, available for the purpose a store of very capable material, at present latent, as it were, from which there could speedily be evolved the pioneers of that teaching body which would assuredly take shape in response to any definite demand. It would be unreasonable to expect that any scheme dealing with a subject both new and immediately applicable to all schools should be launched in perfect working order. It would have to evolve much of its essential machinery in the very process of its growth, and for some time to come very many points of administrative detail, most of the arrangements of its equipment, would need to be improvised, adjusted, and readjusted, as it gradually wore to its proper position, and achieved its due recognition.

In the first instance, the teaching of such a subject would, in such circumstances, fall naturally to those whose personal work or professional position had already made them more or less cognisant of its mysteries. But few natural-science teachers

would find any practical difficulty in mastering the elementary laws of health if the stimulus were provided; the medical officers of schools would furnish many efficient instructors to whom both the subject and the teaching of it would be congenial; and—here and there, at all events—the local medical officer of health would be able to spare the time to fill such a post with credit to himself and advantage to his pupils.

This particular source of supply cannot, however, be regarded as inexhaustible. It is true that his Local Board commonly expects their medical officer to be omniscient—and he does his best worthily to avoid disappointing them; but he cannot be omnipresent. Within the comparatively small area of a large city he might perhaps find time for some of these additional duties of instruction, inspection, and supervision which have recently been sketched out for him. But in the larger rural districts—the extent of which often overtaxes his energies as it is—no man, however willing, could properly be expected to respond to further demands of a nature so diverse and engrossing. In these scattered districts, however, it would often be possible that the smaller schools should be grouped or amalgamated for the purpose of being visited by a trained instructor in hygiene on certain days; or the children from a group of several such schools might be collected in some relatively central building for the purpose, after the fashion recently suggested for securing instruction in physical training in similar circumstances. At any rate, from one or other of these sources, or from a combination of them, it is reasonable to suppose that the advance-guard of an adequate body of teachers in rudimentary health-lore could be speedily recruited for effective service in the secondary schools.

All this, whatever the precise means by which it is to be achieved and set in permanent working order, must necessarily involve additional outlay on the part of every school concerned in carrying out such a scheme—an appreciable addition to the prime cost of education in the case of every pupil; and, consequently, in the case of every secondary school, an additional tax upon the pupils' parents. Here, again, the effective value of "compulsion," to the extent that provision for instruction in rudimentary hygiene shall be made obligatory upon all schools by statutory enactment, becomes obvious. It would, in the first place, ensure against any schools "underbidding" others, at the expense of a vital element in the education which they provide for their pupils—by omitting that subject from their curriculum. And it would also—since official inspection and supervision of the teaching are necessary corollaries of its compulsory imposition—secure that in none of them could the quality of such teaching fall below a certain specified minimum. For these reasons, amongst others, it is a matter of regret that the opening sentence in the petition recently presented to the Central Educational Authorities of the United Kingdom by the medical profession was not, in one respect, couched in terms more strong and definite. The Central

Educational Authorities are urged "to consider whether it would not be possible to include in the curricula of the public elementary schools, and to encourage in the secondary schools" suitable and sufficient instruction in the rudiments of the laws of health.

One may fairly ask what was really present to the minds of the petitioners when they prayed for the "encouragement in the secondary schools" of a subject not yet taught there. What definite shape was such encouragement to take, how was it to be effected—how made universally effective? A step in this direction would certainly be taken were the rudiments of the laws of health made an obligatory subject for candidates for commissions in the Navy and the Army. The mere fact that the disease-rate and the death-rate in the British Army are more than three times those obtaining in the German Army, for instance, should suffice to justify the wisdom of such a step. But its effect might even prejudice the position of the subject in the public schools, by tending to give it a "special" character, valuable as an educational (*i.e.*, examination) asset only in relation to preparation for the Services, and so lead to its being relegated almost entirely to the "Army class" and the "Army tutor." Nor would the position be much bettered were the subject also made obligatory upon candidates for all posts in the Civil Service—as it should be. Indeed, if we apprehend aright the weight and the universal applicability of the reasons which moved the petitioners to address the educational authorities on this matter at all; if we appreciate the arguments which they themselves advance on behalf of the object for which they plead—the practical contrast between "inclusion in the curricula" of one set of schools, and the vague suggestion of "encouragement" in the others, appears little less than a faint-hearted contradiction; for it falls far short of what has been termed the wise man's rule in life: "Ask for everything; expect half; be content with what you get." If we admit—and who now-a-days does not do so—that a working knowledge of the elementary laws of health is most desirable for the individual—for his own sake and for that of the community alike—we cannot get away from the admission that it is desirable for all individuals. Why, then, is it to be ensured for some only? If it really be a subject of which some knowledge is so valuable to the scholar, ought we not to labour for securing that it shall "be included in the curricula of" every school for either sex throughout the Kingdom?

Although the pecuniary aspect of the question is one which clearly has to be faced, it is no extravagance to claim that the money which will have to be thus expended must in reality be looked upon as an excellent investment. After all, there is nothing so costly as illness, no misfortune so expensive in a material sense as ill-health; and we need feel no misgiving but that any reasonable outlay for securing efficient instruction in the "knowledgeable" care of that complicated and delicate machinery by which the world's work is accomplished will be

abundantly repaid in kind. It may also be pointed out that the kind of teaching which is really wanted does not require the provision of costly or extensive plant. A few clear and simple diagrams, some modest apparatus quite simple in construction—mostly easy to make, at any rate cheaply to be bought—a few specimens readily obtainable from the fields or from the butcher's shop: thus equipped, the capable teacher who knows his subject and loves his profession should have no difficulty in holding the attention of his pupils, and in riveting their interest in the subject by bringing home the bearing of his facts upon the obvious structure of their own bodies. Broad facts, broadly outlined and clearly explained, in relation to the important phenomena of the individual's daily life will secure all that is necessary or desirable to be made known, all that is—in this relation—worth remembering by the many, without any need for entering into morbid or unwholesome detail. Minutiæ would be out of place and almost certainly misleading. To this aspect of the matter, the old Bishop's famous dictum is peculiarly applicable: "If you try to tell the whole truth, you are certain to deceive." Only the other day it was gravely proposed by an educationist that every school should not only possess a set of pocket lenses, which would be useful, and a compound microscope—which, if not exactly necessary, would be at least a valuable luxury—but also "at least one good set of slides of bacteria. If possible, the children should see at least one good culture of some kind of bacterium—say, *the bacillus of tuberculosis*" (!) Such a suggestion would be deplorable if it were not so fantastic as to be beyond the reach of serious criticism. Imagine the ten-year-old child of the ploughman making acquaintance with the world about him through a one-sixteenth oil immersion objective! It is the attempts at child-teaching of this sort which beget and justify such answers as that recently given: "Infectious disease is caused by jams, it grows in jellies." Enthusiasm is a factor in progress—not less welcome than necessary; but a proposal to instruct young children in the elements of the laws of health upon lines such as these, would merit all the opposition which it would assuredly evoke amongst the reasonably-minded, and could do much to make impossible the realisation of a beneficent scheme.

It will readily be admitted that no step so grave and far-reaching in educational reform as the addition of a practically new subject to those already on the recognised list can be accomplished in this country unless it is supported by the general assent of public opinion, or in the face of any powerful opposition. Public opinion is, however, already aroused to some appreciation of its claims; it is practically unanimous in supporting the proposal for instructing children in the physical training of their bodies; but, as was pointed out in the Report of the Inter-departmental Committee on this subject, physical training is but a part of that teaching of the laws of health which the needs of the nation call for; and we may add that it is a part which, if it be taught alone, is deprived of much of its real

value. If the recently founded National League for Physical Education and Improvement, the aims of which Sir Lauder Brunton recently brought before the members of the Incorporated Medical Officers of Health and the Federated Association of Head Teachers, use the influence which they command for rousing public opinion and for focussing it upon the necessity of giving to all children reasonable opportunities for learning to understand what health is, what it means, and what are the simple measures by which every intelligent person can help to secure and maintain that blessing for himself and for others, they will be promoting one of the greatest peaceful revolutions yet known in the world's history.

THE LIGHTING OF SCHOOL CLASS-ROOMS.

By ALAN E. MUNBY, M.A.

AMONG the many considerations connected with the planning and arrangement of class-rooms, the question of efficient lighting is perhaps the most important. Though statistics have shown that great and permanent harm is done to the eyes of children, at an age when physical impressions are most marked, by work done in badly lighted rooms, it is only in the newly erected schools—at least in this country—that the subject appears to be receiving any serious attention.

The problem of good lighting does not admit of any stereotyped solution, because the conditions present so many variations. The situation of the school, in town or country; the size, proximity and reflecting power of surrounding objects, and the aspect of the rooms, are all factors to be included in the solution, apart from questions of internal configuration, equipment and decoration. In the case of a new building many of these considerations come within the province of the architect, but the active co-operation of the school authorities from the first is most essential. Plans are too often submitted and approved before a sufficient assignment of the rooms has been made, and although it is not always possible to feel a prospective school "in being," or to make the architect feel that he is an important wheel in the mechanism of the time-table, the more nearly this end can be attained the more successful will be the outcome.

To deal first with the external conditions affecting the lighting of the class-room, which naturally assume the greatest importance in the case of a town site; it has been laid down by an American authority that neighbouring buildings should not be nearer class-room windows than twice the height of such buildings, while some German regulations make sixty feet the minimum distance for any external obstruction. The possibility of subsequent interference with the light owing to future buildings should not be forgotten, especially in the case of a school adjoining land tending

to increase in value, and this has become more important since a recent decision was given in the courts obliging a plaintiff to prove actual damage before granting an injunction against an adjoining owner for interfering with "ancient lights." It may be taken generally, that no external object should be able to cast a shadow into a class-room, and that a straight line, drawn from the furthest corner of the room thirty inches above the floor through the upper panes of the windows, should not, if continued, strike any external object. In cases where obstructions already exist, or when buildings must be erected at close quarters, their reflecting power is all-important. The use of white-glazed bricks, or even whitewash, on such opposing surfaces will often improve the lighting of a room to an extent which would hardly be credited. Again, rooms looking on areas or passage-ways may often obtain a greatly increased utility by the use of prismatic glass, either fixed externally or to replace part of the ordinary window glazing. Such glass, by total reflection, throws much of the light which would ordinarily strike the floor near the windows in an almost vertical direction, horizontally, and hence across the room. The proper angle of the prisms is essential for the best results, and should be determined by personal inspection on the part of the firm supplying the glass.

The aspect of a class-room is a prominent factor in its successful lighting. The morning hours in a school are the longest during which natural light is used; and as sunlight is most essential, the best aspect is east to south. Rooms facing north and west, if inevitable, should, to be equally well lighted, have a larger window area. Turning to the arrangement of the lighting in the rooms itself, the necessity of avoiding shadows thrown by the hand in writing makes it most desirable that the windows should be entirely upon the left of the room as the boys sit. If left-hand lighting is impossible, the Board of Education recommend right-hand lighting as the next best thing. Rather than resort to this, however, the whole of the furniture in the room should be reversed; but if the lighting must be from the right, then every means should be taken by attention to lining materials or wall decorations to give the opposite wall as high a reflecting power as possible. Top-lighting is not desirable, except in a studio, and even here high side-lighting (giving east as well as north light) seems to be preferred by modern authorities; further, a top-lighted room is generally hot in summer, and cold (if not wet) in winter, and is always far from cheerful. Windows at the ends of a class-room are to be deprecated, except for purposes of ventilation, when they should be high up and small as compared with the main windows; similar windows upon the right side of a room are often useful for a like purpose. On the supposition that the room can be lighted solely by a range of windows on the left side, it will generally be found that the range should run the whole length of this wall. The total glass area now demanded by the Board of Education (irrespective of aspect) in schools controlled by this authority is one-fifth of the floor

area. The consideration of the dimensions of the class-room does not fall within the scope of this article; it is very carefully dealt with in Mr. Clay's book on "School Buildings," and some statements on the matter recently appeared in these columns.¹ The breadth of the room should not be more than twice its height, in which circumstances it will be found possible to provide the requisite window area on one side of the room only, without taking the windows down too near to the floor. The height from floor to glass should always lie between 3 feet 6 inches and 4 feet 6 inches. The latter may sometimes be necessary when outside distractions exist, but in the country the former is much to be preferred, as it adds greatly to the cheerfulness of the room, and prevents the possibility of shadows on the nearest desks. When the greater height is used the internal sills should always be steeply bevelled, and the piers or mullions between the windows should be bevelled in a similar way, especially if the walls are thick and the glass area at all restricted. Windows should always run right up to the ceiling whenever this is possible, to throw light across the room and to aid ventilation. Since all curtains and hangings should be absent, there can be no objection to this arrangement. Although casement windows are sometimes more easily opened and may be preferred as regards appearance, the ordinary sash window is undoubtedly the most suitable for a class-room, and should be glazed with clear glass in large panes. It should not be forgotten that the large glass area demanded entails additional care in arranging for the provision for a proper temperature in the room, especially if it has a bad aspect or is to be much used for afternoon or evening work. Double windows, though seldom used in this country, do much to equalise the temperature and prevent draughts striking down on those sitting near the windows. It is occasionally desirable to decrease the light in a class-room, and therefore blinds should be provided, at least in the rooms facing south and west. Buff or green holland blinds are the best, and if fixed horizontally in pairs at the centre of the window, so that the top half will draw up and the lower half down, the light can be controlled suitably under nearly all conditions.

It is very desirable that the efficiency of the lighting in existing rooms should be known, with a view to the consideration of possible improvements. By placing similar printed charts in similar positions as regards distance from the windows in different rooms, some idea of the relative value of the lighting may be obtained by passing rapidly from room to room and comparing the facility with which the charts can be read at a given distance. Before passing judgment, however, it is advisable to repeat the experiment on a number of occasions and to average the results, as a passing cloud is quite capable of decreasing the light in a room by two-thirds, even

¹ "The School Class-room." THE SCHOOL WORLD, August, 1904.

when the sun is not shining directly into the room. Tests with photographic exposure-meters in different rooms and in different parts of the same room, made on a cloudless or wholly cloudy day, would give useful information. It would not be difficult to assign numerical values to a series of tints on sensitised paper, which could be fixed and used as a standard; then, by taking simultaneous records in the rooms and in the open, outside the building, a *ratio* should be obtainable which would permit of some valuable comparisons for different rooms and even for different schools. The method might be extended so as to afford information as to how far deficient lighting was due to the defects of the room or to the presence of external objects. The use of synchronised photographic light recorders, coupled with a series of tests upon the sight of the pupils, ought to produce some valuable statistics to increase our knowledge of causes of defective vision.

So far as can be ascertained, the above suggestions for tests upon lighting efficiency present some points of novelty. No lighting standard for rooms exists at present, and so much importance is attached to the question of light by educational authorities that any experiments leading to a practical result would undoubtedly be considered for general adoption.

The writer would be glad to hear from any reader of this article who possesses the necessary facilities and feels sufficiently interested in the subject to consider carrying out a series of experiments on the lines suggested.

In arranging for artificial light in a class-room, three essentials must be kept in view: good distribution, the avoidance of shadows, and the absence of glare, directly or by reflections. The first is gained by providing a large number of lights of low power, spaced as far apart over the workers as possible. This naturally increases the cost of installation, but more effect is obtained per unit of energy than when the lights are grouped together (except, perhaps, in the case of a large "sun burner," which is not desirable). Large central lights are to be avoided; not only do they over-light their immediate neighbourhood while leaving the further desks in dimness, but (unless very high up, when they must be extravagant to be sufficient), they cast head shadows on the front desks and hand shadows on the left desks. Frequent re-whitening of the ceiling, or the use of large, dead-white reflecting screens, may, however, do much to improve a room deficient through central lighting, and for such surfaces whitening is a better substance to use than lime. The use of white, opalite shades will prevent a considerable loss of light in the upper part of the room, particularly if lofty. To avoid shadows, the lights should be so hung that the illumination of the room is a little greater on the left and in front than elsewhere; the cost of symmetrical appearance is a small price to pay for the advantage obtained. The question of glare should not arise with good distribution, provided that the decorations and objects in the room do not possess highly reflecting sur-

faces. If "frosted" globes are to be used, the power of the light ought to be doubled. No unanimous opinion exists as to the amount of light which should be supplied to a room even under stated conditions, but the rule sometimes employed by electricians, allowing one sixteen-candle-power lamp for every thousand cubic feet, certainly gives too low a value for a class-room.

NON-CLASSICAL SECONDARY SCHOOLS.

I HAVE had much pleasure in forwarding to the Editors of THE SCHOOL WORLD for publication the following statement which has been put into my hands by a gentleman who is intimately acquainted with the working of the so-called Division A schools. Many of us were surprised and pained at Cambridge on hearing Canon Bell's paper read, as it displayed such complete misunderstanding of the great work done by the Science and Art Department, such complete lack of gratitude.

But we English are a strange people: we seem never to know when we have done a good thing. Until 1902, the Education Department at Whitehall had no right of entry into secondary schools; it knew nothing about them. The Science and Art Department, however, at an early date, gained admission to many such schools for the purpose of inspecting the science classes which were carried on in them; incidentally, the inspectors had the opportunity of forming opinions on the literary work of the schools and over and over again they have called attention to its defective character. A paragraph such as the following, which appears in the third report of the Department (1856) under the heading "Schools of Science," is in itself almost a sufficient answer to Canon Bell's "unfair and illiberal" criticism:—

Although, with the exception of Aberdeen, the fees derived from the pupils have hitherto been found sufficient to meet the salaries of the masters without encroaching upon the guarantee fund, the difficulties of contending with the very deficient preparation of the pupils attending the classes have been found to be so considerable that the Department has been unwilling to found separate science schools without at the same time furnishing means of continuing the general instruction of the pupils up to that point which will enable them to study science with advantage.

There is no doubt that the Division A schools have in many cases done a great pioneering work, although like all schools they have their faults: among these may perhaps be reckoned the fact that one of them has recently been induced to give up its distinguished headmaster to the Board of Education to act as Chief Inspector of Secondary Schools. But they must be mended, not ended; and the veiled menace of disestablishment which is only too obvious in the 1904 Regulations for Secondary Schools cannot be too severely deprecated. Not only Oxford (and Cambridge) but our national system of education as a whole are at the cross-roads. Every attempt to jettison experiment, from whatever source it may come, must be resented and resisted.—H. E. ARMSTRONG.

In the old days, from 1872 onwards, the unfair and illiberal practice of fostering science by special exclusive grants bribed many schools to upset the balance of the subjects necessary for a liberal education. In 1902 a first step was taken to redress the injustice by assignment of grants to Division B schools, in which science formed an important but not a preponderating element in the instruction. — British Association, Section L, Cambridge, August 19th, 1904.

The above paragraph, taken down from a paper by Canon Bell read in the Section of Educational Science at the Cambridge meeting of the British Association, is so far from being accurate that a statement of the actual facts seems desirable.

The charge which Canon Bell makes against the State of exclusively subsidising science instruction in secondary schools is in reality a reflection upon the schools themselves, inasmuch as they persistently refused to make adequate provision for scientific instruction, notwithstanding that public opinion, realising what were the educational needs of the country, was clearly in favour of a departure from scholastic tradition. The headmasters of the public schools, claiming as they did to have the educational conscience of the country in their keeping, should have been the first to recognise that "new times demand new measures and new men"; but unfortunately they were men who had passed through a highly specialised course of training: consequently they had developed in their schools a degree of specialisation that has never been approached even by the worst of the much-abused schools of science. To bribe was to offer the only form of argument which could be generally understood; but the object was to bring about a balance, not to upset one.

When opinion throughout the country realised that little was to be expected from the public schools and universities, the Department of Science and Art was established to foster the teaching of science, which was then felt to be a pressing need in national education. Herbert Spencer and other great scientific thinkers of the middle of the nineteenth century had insisted that a knowledge of scientific method must accompany the acquirement of scientific facts; indeed, there is no doubt that this ideal formed part of the educational policy of the Department before the time when the system of payment on results of examination tended to make the teaching of science a commercial speculation. It cannot be denied that a large amount of unscientific teaching took place under this régime; but the enlightened policy initiated by Sir William Abney made higher ideals possible and soon led to the introduction of improved methods.

During the period from 1872 onwards, in which Canon Bell states schools were "bribed to upset the balance of the subjects necessary for a liberal education," in the comparatively few secondary schools that took the subject at all, science-teaching seldom occupied more than four hours per week; in the majority of cases the time devoted to it probably did not exceed two hours per week. The lessons were given as special science classes, separate registers being kept of those in atten-

dance; they were often held outside the regular school-hours. If such an allowance of time can be said to destroy the balance of subjects necessary for a liberal education, it is only possible to conclude that, from the "humanist's" point of view, the introduction of *any* science will destroy this balance.

Possibly Canon Bell, in the sentence quoted from his paper, referred to the "organised science schools" which later on were styled "schools of science" and "Division A schools." The first and second of these titles have led many to form an entirely erroneous conception of the character and curriculum of such schools.

The regulations laid down for them were framed to develop the modern side of the curriculum and to prevent an overmastering influence of classics; but they allowed classics to form—if the school authorities so desired it—a very considerable "but not a preponderating element in the instruction." Thus, whilst it was stringently laid down that ten hours per week must be given to literary subjects, only thirteen hours were allotted to practical and theoretical physics and chemistry, all branches of mathematics, geometrical drawing and art. As the school week in such schools would be about twenty-nine hours, this arrangement left six hours which could also, if necessary, be devoted to literary studies. Deducting five hours as necessary for arithmetical and mathematical instruction and from three to four hours for geometrical and freehand drawing, therefore, but *four to five hours per week were compulsorily devoted to science*, whilst ten, with an option up to sixteen hours per week, were devoted to literary subjects. This is "the unfair and illiberal practice of fostering science" at the expense of literary studies.

Although the teaching of classics was by no means excluded, such schools would reach their highest efficiency as non-classical schools. The smattering of classics that the *average* boy or girl (and we should always legislate for the *average* pupil) leaving school at sixteen years of age obtains does not, as a rule, yield a good dividend on the time and capital expended. The kind of school which the Department originally desired to see developed apparently was a non-classical school of modern type, giving a thoroughly practical literary and scientific training, free from all external control. Such schools were to have all the essential characteristics of a public secondary school; and, as a matter of fact, a standard of tone and of *esprit de corps*, as well as skill in properly organised games, have been obtained in such schools which will enable them to compare favourably with the best grammar-schools.

Critics will, however, point to instances in which schools of the lower secondary, examination-loving kind have strained their time-tables to the utmost in order to qualify for "the bribe" the Department offered. On the other hand, they will point to higher-grade elementary schools which have retained their large classes and elementary school traditions and seldom carry more than a

small percentage of their pupils beyond the second year's work. These, however, are the abuses, not the uses, of an excellently conceived scheme; they should have been dealt with firmly before the days of Cockerton.

It has been the aim of the staff of the properly conducted "Division A" school to achieve culture without classics and to give tone without slavishly following tradition. Humanists may scoff at the idea of culture being derived from careful and well-considered teaching of science and English; but sufficient has been done in the Division A schools already to show that the accurate habits of work, thought and expression which it is the function of scientific teaching to create, combined with a careful study of the only language in which the pupil can think, give possibilities of culture at least equal to, if not far above, that obtained by the average boy devoting two-thirds of his time to Greek and Latin.

The following time-table indicates the apportionment of time in a very successful large non-classical secondary school such as we have been describing. Although the school week amounts to thirty-one hours, which at first sight might appear excessive, much of the most effective work of the school is not regarded by the pupils in the light of tasks, nearly one-half of the total time being spent at practical studies outside the class-room:—

Subject.	First year, 13-14.	Second year, 14-15.	Third year, 15-16.	Fourth year, 16-17.
Mathematics	8 periods	7 periods	8 periods	10 periods
English	5 "	4 "	3 "	3 "
History	2 "	2 "	2 "	—
Geography	3 "	2 "	—	—
French	4 "	4 "	4 periods	3 periods
Chemistry	4 "	4 "	—	—
Physics	4 "	4 "	4 periods	5 periods
Workshop	2 "	3 "	2 "	2 "
Art	2 "	2 "	1 "	—
Geometrical Drawing	1 "	2 "	1 "	—
Physical Exercises ..	1 "	1 "	—	—
Hygiene	—	1 "	—	—
German	—	—	4 periods	4 periods
Chemistry or Engi- neering	—	—	7 "	9 "
	36 periods.	36 periods.	36 periods.	36 periods.

The periods referred to are either of three-quarters of an hour or of one hour's duration. Laboratory or workshop classes extend over two periods at the end of the morning or afternoon session; mathematics is always taken during the first period of a session.

One of the mathematical periods in the first-year time-table is devoted to experimental and in-ventional geometry as an introduction to demonstrative geometry; and in the following year one period is devoted to experimental trigonometry and graphics, as an introduction to the formal study of the subject in the third year.

During the winter months, the meetings of the school literary and scientific society are included in the school time-table; these meetings, presided over by a member of the staff, are conducted on strict business lines, the sixth-form prefects being responsible for the minutes and the general arrangements. Every sixth-form pupil must read a paper

during the session and, if necessary, must illustrate it with lantern slides made by himself; the staff advise as to the subjects to be chosen for the papers and discussions which follow. The pupils thus learn not only how public business is conducted but also acquire the habit of using a good reference library and ability to express themselves in spoken English.

Methods of instruction and the preparation of lessons need careful attention throughout such a school. Although there must be several "subject masters," the "form master" will have from twelve to fifteen hours with his form, which is quite sufficient time to allow him to become acquainted with the idiosyncrasies of his pupils. In such a school, experimental research into methods of instruction develops as naturally in the literary as in the scientific subjects; and experience has shown that the standard of teaching in linguistic studies may reach an exceptionally high level. Though a very little Latin is desirable as a part of the English teaching, classics cannot receive a large or even useful share of time; and the curriculum will be spoilt if an attempt be made to introduce classics for examination purposes. The boy who has had four years of thorough disciplinary training, having learnt how to learn, however, is in a position to master the amount of classics required for preliminary examinations in a very short time. A curriculum such as is sketched above, if carried out with care and imagination, is broader, more formative and better adapted to the needs of life than the intensely specialised curricula of most classical public schools.

It must not be thought that the time devoted to *real* studies in training the hand and eye in conjunction with the brain does not necessitate plenty of hard work on the part of the pupil. If the teaching be properly conducted, just as severe a mental effort is required from the pupil as in any other type of school; but, being interested and self-reliant, he is in an advantageous position to accomplish hard mental work.

The character of the work in the first two years is fundamental and disciplinary; in the next two years it becomes somewhat more informational; but at no stage must the text-book be allowed to usurp the proper functions of the teacher.

The non-classical school requires an especially well-trained and experienced staff, capable of co-ordinating the literary, scientific and practical studies.

This is particularly the case in the lower forms, which require thoroughly trained teachers possessing considerable experience, energy and initiative. The young man straight from the university is often of little use during the first two years. After this period, if he be gifted with the teaching instinct and sympathy, he may begin to understand that method and aim are of primary importance; his apprenticeship years will do less damage in the upper than in the lower division of the school. Nor is the teacher of the ordinary or higher-grade Board school, as a rule, of much use in a school such as is contemplated: the best and most ex-

perienced elementary teachers are better off in their own schools and are not attracted by the £150 a-year, which should be the *minimum* salary of any teacher in a good non-classical secondary school. Too often the primary school-teacher, with the tradition of large classes and mechanical methods, finds himself unable to keep the kind of discipline necessary or to participate in the games and other essential social organisations of the school. His academic training is often deficient and he lacks the broad knowledge of the world that association in the university with men of varied interests tends to create. The production of a healthy and enthusiastic school tone is indispensable to a secondary school of the type we are advocating, but unfortunately many of our teachers in primary schools have in the past paid altogether too little attention to the life and interests of their pupils outside the class-room.

We cannot expect these schools to be self-supporting, as an expensive staff and an expensive equipment are equally necessary; classes must be small to make instruction by practical methods successful.

Much of the adverse criticism to which the non-classical school has been subjected has been brought about by the attempt of many so-called higher-grade schools to pose as secondary schools. But there are "higher-grade schools" and "higher-grade schools;" some are of such all-round excellence that very little criticism could be levelled at them; but it is to be feared that the majority have attempted to carry out a quasi-scientific course of instruction which was neither scientific nor educational. The new regulations contain a provision of value in that they clearly differentiate between what is and what is not secondary education.

The creation of the term "school of science" was perhaps unfortunate and has given rise to some misconception as to the character of the work accomplished by these schools; especially as an impression was thereby created, in the minds of those who did not take the trouble to look inside them, that they were highly specialised schools. It was also unfortunate that the Board of Education allowed their proper functions to be abrogated and that schools destined to provide a well-balanced modern education should have been created and fostered by the Department of Science and Art, acting as a separate and independent body.

The unjustified criticism which has recently been directed against the Division A schools has too often, we fear, been inspired by older classical schools, which have been affected by the success achieved by the new schools. The classically-trained schoolmaster is apparently unable to understand and usually fails to appreciate the aims and ideals of a school in which scientific method underlies all instruction. It will be a deplorable, indeed a national calamity, if any hindrance, however temporary, be offered to the work of a class of schools which has already done so much to provide that practical and non-academic education of which at the present time the country stands so greatly in need.

SECONDARY SCHOOLS AND THE UNIVERSITIES.

II.—THE UNIVERSITY OF OXFORD.

THE influence of this University upon the secondary schools of the country is exercised mainly in the following ways, viz. :

(1) Through the schoolmasters who are educated and trained at the University.

(2) Through its representatives on the governing bodies of many of the public schools and grammar schools, as well as on local education authorities.

(3) Through the system of awarding, by open competition, scholarships and exhibitions for the assistance of meritorious students during their university career.

(4) Through its Responsions examination.

(5) Through three of its standing committees (or Delegacies) for the conduct of University business.

It would be possible to discuss the subject in some detail under each of these heads, but the present paper will be limited to a description of the mode of working of two of the Delegacies just referred to, namely, "the Delegacy of Local Examinations" and "the Delegacy for the Inspection and Examination of Schools." The third Delegacy is an offshoot from that for local examinations, and has had a separate existence since 1892, under the style "the Delegacy for the extension of Teaching beyond the limits of the University."

The work of the Extension Delegacy is not confined to adult students. Lectures are held at secondary schools, and pupils from such schools also attend affiliated centres. The supplementary teaching thus supplied has proved in many cases to be a valuable addition to the instruction regularly given by the school staff.

The two other Delegacies have, however, been brought into closer connection with a much larger number of schools, and their operations have extended over a longer period.

The Delegacy for the "inspection and examination of schools" has existed since 1874 for the purpose of testing the work of the public schools and other schools preparing pupils for the universities, and especially for providing a "Leaving Examination" for the highest forms of such schools. This Delegacy is in association with a Syndicate at Cambridge, and the two bodies constitute the Oxford and Cambridge Schools Examination Board, often called "the Joint Board."

The Delegacy for Local Examinations was created in 1857, for encouraging and improving the work of the grammar schools and private schools giving secondary education.

Both these Delegacies include in their operations girls' schools as well as boys' schools, and both inspect as well as examine. In the early years of their history comparatively little inspection was done, but in the last few years the number of in-

spectations conducted by them has increased, and it is probable that the demand for such inspections will grow in connection with the new School Certificates and Leaving Certificates for candidates for the Army and others which have been instituted by both delegacies.

It may be added that, although the Delegacies are distinct, they work in cordial co-operation as different committees acting for and in the name of the University. Both alike represent the serious interest which it takes in the schools which are conducting the secondary education of the country. If application is made to the Board of Education for an inspection of a school by the University of Oxford (under the Board of Education Act, 1899), such application is referred by the University to the appropriate Delegacy. The identity of the relationships of these Delegacies to the University is further exemplified by the fact that, if any local education authority applies to the University for the inspection or examination of a group of schools, such work is carried out either by one Delegacy or by both.

THE DELEGACY FOR THE INSPECTION AND EXAMINATION OF SCHOOLS (acting in conjunction with the Cambridge Syndicate) has been mainly concerned with the inspection and examination of schools of the highest grade. It receives applications for such an examination or inspection from the authorities of any school which has a regularly constituted governing body, or which prepares a fair proportion of its pupils for the universities, or in other ways gives evidence of providing a school education of the highest grade.

It also conducts examinations of schools, or for scholarships, in behalf of societies or bodies controlling a number of schools.

Whether dealing with single schools or with groups of schools, its methods of examination are various, and the delegacy is anxious to make its arrangements as elastic as is compatible with the maintenance of a proper standard.

The work falls under the following main types:—

I. Examinations for purely school purposes arranged specially for a single school or for a group of schools, — “school examinations” in the limited sense. Such an examination may extend to the whole school or to certain forms, but is always an examination of classes rather than of individual candidates. It may be written or oral; or, more generally, both written and oral.

Instances of special arrangements are:

- (i) A general oral examination combined with inspection of the results of a written examination, in which the questions have been set by the Joint Board, and the answers marked by the school staff.
- (ii) An examination by means of papers composed by the staff and approved by the Board.

II. Examinations by means of standard papers set to a large number of schools, and graduated to meet the capacities of various ages and classes. The most important of these examinations are those for—

(a) The Higher Certificate, for pupils of about 18.

(b) The Lower Certificate, for pupils of about 16. (The principle of general education is enforced by the rules governing the Higher Certificate and Lower Certificate examinations, which make it impossible for a pupil to get a certificate without satisfying the examiners both on the literary and on the scientific side.)

The Higher Certificate, under certain conditions, exempts the holder from Responsions at Oxford and the Previous Examination at Cambridge. Arrangements are nearly complete by which it will, under certain conditions, exempt from the Matriculation Examination of the University of London. Both the Higher and the Lower Certificate examinations are accepted by many professional bodies in lieu of their own special examinations.

In each of its examinations the Joint Board, on application being made, supplies for any school, which desires it and is prepared to defray the extra cost, special papers of the same standard to meet the requirements of the school.

(c) Besides the standard papers for Higher and Lower Certificates, the Board also provides a series of graduated papers for Lower Forms (from Form V. downwards), which may be taken by schools which wish to avoid the expense of special papers.

III. A school examination may combine both I. and II. Some of the papers used are the standard papers referred to above, while some are special papers. Again, some of those examined are candidates for certificates, and some are not.

This is the usual character of a school examination.

IV. Hitherto, though some schools have been both examined and inspected by the Board, the relations of inspection and examination have not been very close. The Board has now instituted a School or “Leaving” Certificate, of which the main characteristic is that it will be granted only to pupils who, besides passing an examination in certain subjects, are certified as having passed through a three years’ course at a school (or schools) inspected and approved by the Joint Board or by the Board of Education. This Certificate is intended for pupils of about seventeen, and will qualify its holder under certain conditions to enter for the Competitive Examination for admission to the Royal Military College. It is contemplated that a similar School Certificate will be granted to those candidates for the Higher Certificate who satisfy the same conditions as to school curricula, &c., but the arrangements for this are not yet complete.

With some differences of detail, the operations of the DELEGACY FOR LOCAL EXAMINATIONS bear a close resemblance to those of the Joint Board.

There are four grades of examination for which candidates may enter themselves without reference to their place of education. These are the Higher Local, the Senior Local, the Junior Local, and the Preliminary Local, examinations. Of these the

first is largely used as an avenue to Column B of the Teachers' Register. Under certain conditions the Higher and Senior Local examinations exempt from Reponsions. A Senior Local Certificate excuses the holder (also under certain conditions) from the Cambridge Previous Examination, the Matriculation Examination of some other universities, and the preliminary examinations of some professional bodies, and a Junior Local Certificate is also accepted by some professional bodies.

The Delegates have instituted two grades of School Certificates as well as a Leaving Certificate for candidates for the Army. These are awarded on the results of the Senior and Junior Local examinations to successful candidates from "approved" schools, *i.e.*, schools which have been approved by the Delegates after inspection by them or by the Board of Education or by an inspecting body recognised by the Delegates.

It is expected that arrangements will shortly be made whereby the holder of a Joint Board School Certificate or of a Local Examinations Senior School Certificate is (under certain conditions) exempt from Reponsions.

The curriculum included in the Local examinations is a wide one, allowing great freedom in the choice of subjects; and in addition, just as in the examinations of the Joint Board, special alternative papers may be set to candidates from a given school or group of schools, and their answers accepted as part of their work for a certificate.

An oral examination in French and German will be held in 1905 for Senior candidates, and in 1906 for both Senior and Junior candidates.

In conducting their examinations both delegacies require as high a standard of attainment in each subject as is possible without undue specialisation or pressure on the schools. The examiners are all men of experience in education, many of them having been previously engaged in school teaching. In each examination the question papers are revised by committees appointed by the corresponding Board, and the results of the examinations are similarly supervised and settled by committees.

Both Boards, by correspondence with the Headmasters' Conference and the Incorporated Association of Headmasters, as well as with other bodies and individual heads of schools, endeavour continually to consult those engaged in secondary teaching and to ascertain their opinions.

In addition to their examinations for certificates the Delegates of Local examinations conduct both the inspection and the examination of schools, and also assist County Education Authorities in the award of scholarships and exhibitions.

A school examination, as held by this Delegation, may be independent of the Local examinations or combined with it (*cf.* I. and II. of the Joint Board Scheme). For a "Combined School and Local Examination" it is not necessary that all the pupils should be candidates for certificates. Those who are not candidates may be examined by means of Local examination papers. This arrangement has proved very convenient in a number of schools.

In school examinations conducted by these

Delegacies the principal examiner as a rule visits the school. This enables him to learn something of the work and methods of the school, and to discuss questions connected with curriculum and teaching with the headmaster or headmistress. An experienced examiner may render great service to a head in such discussions, while, on the other hand, he widens his own knowledge of school work and becomes better acquainted with the practical difficulties of the teacher. This personal element in the examinations is most valuable.

STUDIES IN SCHOOL MANAGEMENT.

III. — THE SUPPLY OF TEXT-BOOKS TO SECONDARY SCHOOLS.

By E. SHARWOOD SMITH, M.A.
Headmaster of Newbury Grammar School.

IN that ideal school which Professor Armstrong would fain build up, when we have made "a scrap heap of the whole miserable system of education at present in vogue," no doubt text-books will cease to exist, and with them the many difficulties connected with their supply.

At present, however, this "heuristic nihilism," as it has been happily termed, finds few followers, and we are not yet prepared to stock our classrooms with balances and weighing machines to the exclusion of all literature. This being so, the problem of the supply of books will probably continue to vex the souls of headmasters, and to spoil the tempers of the staff for many years to come. Certainly it has been a source of great worry to myself; and, in the hope that my experience may be of use to others, I propose, in this and a second paper, to consider various methods of solution, and briefly to outline that one which, after some experience, we have here concluded to be the least unsatisfactory.

I say least unsatisfactory, because in the smaller secondary schools—and it is to those chiefly that I shall refer—there can, it seems to me, be no perfect or ideal system. Possibly, the very best method would be to charge high fees which should include the cost of text-books, but this method has only to be named to be dismissed as impracticable. For the system to work well, the fees would have to be increased to cover not only the normal supply, but the many incidental expenses due to loss, negligence and damage.

With the utmost economy in the matter of books, and the exercise of conservatism in their use, even to the point of danger, I suppose that the cost per head must range from fifteen shillings per year in the first form, to thirty or forty shillings in the sixth. Unless, moreover, the fees were regularly graded—always an inconvenient system—according to a boy's position in the school, it would be very difficult to strike a good average.

I will therefore dismiss this method as Utopian

and take in order what I conceive to be the three main methods usually practised in schools, and for convenience sake will refer to them as methods A, B, and C.

(A) The first plan is for the school authorities to specify the books and then leave the pupils to procure them where and how they please.

(B) By the second plan the school provide the books and hire them out to the pupils at a fixed sum per term.

(C) The third method is for the school to act as bookseller, and itself provide and sell the books.

Let me again insist that the question is only acute in the smaller schools, where the majority of the scholars are day-pupils, and the majority of parents persons of limited income. Now method A is in theory the best, and the one that at first sight gives the least trouble to the school authorities. They specify the books, the pupils do the rest. All the inconveniences, the worry and bother of account-keeping, and the indignity of dunning for debts, are avoided.

Possibly, in big towns, where large booksellers exist in various quarters, this method is also the best in practice, particularly if an assistant from a good shop can attend once or twice a week, or daily at the opening of term, to take orders and deal out books to those who prefer to get them this way. Even then, however, he ought to have a room set apart for the purpose where he can keep a small stock of the books most in use, and this is obviously a nuisance in all but the most palatial schools.

Where a school exists in a small town, or in the country, the system breaks down badly. Usually, however small the town is, there are at least two booksellers—perhaps, I had better say, two shops which are eager to supply books—and if only one be chosen to supply the school, the jealousy and ill-feeling caused often re-acts unfavourably on the school. This may seem a trivial and ridiculous objection in theory, but in fact it does create difficulties. The school is accused of instituting a monopoly! I could not have believed this a few years ago, but sad experience brought it home to me when I was working in a small school in a small country town.

In any case, the local bookseller cannot be expected to stock books to any large amount—and who shall blame him? Text-books and masters' tastes are continually changing, and though I believe many publishers are willing to take books back, the process is always attended with expense and delay.

Again, your local man will not send his order for an isolated book, or a few books, unless he requires sufficient material for a large parcel—naturally to save carriage, so that a boy, for instance, who loses a book, and is required to procure another, rarely manages to do so under a fortnight, partly through his own procrastination, partly for the reason suggested above. The point is that one cannot definitely fix the blame on the boy.

Another but slighter objection to the system is that the local man is sometimes not a first-rate scholar, and unless great care is taken in ordering

will often triumphantly produce the wrong book, or blandly inform you that your book is out of print, or even has never been published at all, when you have yourself received a specimen copy a few days before.

Again, there is no doubt that when continual demands are being made on a parent's purse for books, he begins to believe that much of this is quite unnecessary, the cost seeming far more if it does not come altogether, and he will refuse to order the book until persuasion is used, or he recovers his temper.

This method may therefore be rejected as in practical working inefficient. Everyone knows the intense irritation and delay caused by the fact that two or three of the boys in a form have not yet got their books. While it does save trouble in the matter of account-keeping, it causes very much more in the ways that I have tried to indicate.

Method B is, I believe, the one that finds most favour with parents, and with boys themselves, and indeed, with many headmasters. It therefore deserves careful consideration, though personally I have very strong objections to it. A fixed price is charged each term, together with the ordinary school-fees, for the hire of books. This price varies very much in different schools. In some it falls as low as two shillings a term, but usually, it may be said to be from four to five shillings. In some schools only the text-books most in use are hired out, in others all the books. In the first case, therefore, method A has to be adopted for the editions of authors, and practically for most sixth-form books. This seems to combine the objectionable points in both systems, and, in any case, the inconveniences of method A are hardly avoided, as it is precisely in such books that for obvious reasons the difficulties which have been described are usually felt. In the second case, where all the books are hired out, certain very practical objections present themselves. Are all books to be returned at the end of each term, and dealt out afresh at the beginning of the next? If so, is each boy to have the book he had the term before? This would seem the justest course, and is the one usually adopted. But what difference is to be made between the boy who keeps his book in splendid order, and that unhappy boy (and he is in a large majority) who presents it, when his use for it is over, full of dog's-ears and finger-marks, and as an offering fit only for the purifying flames?

Is the boy to be constrained by threats and a Draconian system of pains and penalties to keep it clean?

If so, punishments will be as thick as fallen leaves in autumn, and even then little amendment will be shown. Some boys—often the least able in point of intellect—are naturally neat and tidy; others, with the best will in the world, cannot keep their books decent. No doubt, every boy ought to be taught to respect the books, but he is the less inclined to do so if they are not his own.

But the most fatal objections to the system, in my opinion, are (1) that it is not hygienic or sanitary; (2) that it tends to stereotype the use

of books found after experience to be unsuitable. The price fixed must be a low one, and the system will entail serious loss to the school if books are constantly changed. No one is less of an advocate than I of a constant unnecessary change of text-books—vexatious as it is to both boys and masters; but books rapidly go out of date, and we must keep up with improved methods.

Other objections will readily suggest themselves. Boys are continually losing their books, and, unfortunately, always blaming others with "borrowing." Of course, the temporary owner must be held responsible, but how is he to be punished for loss or irremediable damage to a book? By having to purchase another? In that case he will consider it his own property, and "extras" are always vexatious to collect. If one could only "attach" the pocket-money this might work, but in a day-school that is impossible,

Again, I believe it to be a bad thing for a boy to have no sense of possession in his schoolbooks, though it certainly may be said for this method that it prevents the hateful practice of boys bartering books with one another. Finally, while one would never allow books to be "paved," or overloaded with pencilled notes, yet surely it is an excellent thing to teach a boy to read, pencil in hand, and underline here and there, and write down marginal notes, particularly if the excellent custom is to spread of using text-books with few or no printed notes at all. Either the notes must be very faintly pencilled, and easily removable when the book is returned (and this in practice is difficult), or the second and third "users" of the book take over with it a stock of ready-made marginalia, and thereby lose all the value of the system, and, possibly, enter into unfair competition with other boys for whom the provision has not been so liberal.

Methods A and B have, therefore, been rejected as having more disadvantages than advantages. It remains, therefore, to discuss method C, which can be more conveniently done in another article.

THE STUDY OF TENNYSON'S POEMS.

By LAURIE MAGNUS, M.A.

Author of "Words and their Use," "Introduction to Poetry," "A Primer of Wordsworth," &c.

(Continued from p. 57.)

VI.—Poetry has now been discussed both as to matter and form. The teacher has brought his pupil to the poetic point of view indicated by Carlyle's dictum: "We are all poets when we read a poem well." His next business will be to apply this point of view with special reference to Tennyson and to the poems selected for study. Going back to what was said above, that Tennyson interpreted the spirit of his age, every effort must be made to avoid the stereotyping of this phrase. It is easy enough to say such things, and they are

"useful" in examinations. But in themselves they have no knowledge-value; they do not add to knowledge; no increase of knowledge is obtained by acquiring a stock of ready-made phrases. The criticism of literature, which is at bottom an appreciation of good books, must not be treated as a subject to "cram"; there are no "tips" to be remembered, no tags to commit to memory. Rather let the pupil leave the study alone, and be content to go through life in lazy indifference to all that the beauties of literature might add to it, than accept his opinions and tastes at second-hand, or repeat at the lips of someone else conventional praise and mechanical remarks the meaning of which he has not realised to himself. This alone is the right spirit in which Tennyson must be studied: in this way alone is justice to be done to the thoughts which he bequeathed to us.

(i.) TENNYSON AND THE PROBLEM OF GOVERNMENT.

At this point it may be asked, to which particular problems of life and of conduct did Tennyson apply his genius? Without pausing to enumerate the subjects of the many poems which he composed in the course of his long life, one topic may here be selected to illustrate the kind of message which he gave to his age, and which, in its many-sided aspects, may be read directly or between the lines of most of the poetry which he wrote. The problem of the middle years of the nineteenth century was essentially a problem of government. When Tennyson first began to write, in the earlier years of Queen Victoria, the monarchical system in England was itself of doubtful duration. Apart from the personal question of the succession of a young and untried queen with a German husband by her side to a line of elderly kings, who, whatever their merits, had not impressed the English people with a sense of power or beneficence, this means that England was not unaffected by the disturbance of political thought which moved the Continent at that time. In France, in Austria, in Germany, and in Italy, the struggle between a recently enlightened people and a traditionally protected monarchy had led or was leading to political turmoil and to the risk of revolution and upheaval. It should be stated emphatically that Tennyson was always on the side of order. Unlike Shelley, for instance, and the poets who flourished in England just after the French Revolution, the influence of Tennyson was entirely independent of those soul-stirring appeals to the spirit of Liberty which move the dullest versifier to eloquence. Tennyson—and it has been urged against him as a fault—was at all times eminently law-abiding. Even Mr. Stopford Brooke, for instance, is liable to praise the poet at the teacher's expense:

Tennyson (he says) never became international. The highest conception to which love of our own nation is to lead—the love of all nations as contained in one nation, the nation of men—did not shine in the mind of Tennyson. He was at this point over-English; he is not at this point our poet or the poet

of the future. Through the whole of Tennyson's poetry about the problem of man's progress this view of his does damage to the poetry, lowers the note of beauty, of aspiration, of fire, of passion, and lessens the use of his poetry to the cause of freedom. If the poet takes the unpoetic side of any question he gives no help to mankind so far as the question concerns mankind. "The Princess" stands alone. . . . In all other matters belonging to the progress of society, he does not belong to the last thirty years, to our time, our hopes, or our faith; nor does he think and feel in them as a poet.

If Mr. Stopford Brooke is right—and his work on Tennyson may be recommended to the study of every admirer of the poet—then it would seem almost waste labour to try to extract from the mine of Tennyson's poetry the ore of political wisdom. It would seem that he has nothing to tell, in these days of established monarchy, of the way and manner of thought by which our fathers in the last generation worked out their redemption from the revolutionary ideas with which Europe was flooded. It would seem that Tennyson, despite his beauty of diction, stands apart from the thought of his times, and that, as an interpreter of his age, he is less deserving of close study than the files of the daily newspapers. But is it so? If so, what becomes of that passionate Epilogue "To the Queen," which is printed in his collected Poems, just after "The Passing of Arthur"?

. The loyal to their crown
 Are loyal to their own far sons, who love
 Our ocean-empire with her boundless homes
 For ever broadening England, and her throne
 In our vast Orient, and one isle, one isle,
 That knows not her own greatness. If she knows
 And dreads it we are fall'n.
 For some are scared, who mark,
 Or wisely, or unwisely, signs of storm,
 Waverings of every vane with every wind,
 And wordy trucklings with the transient hour.

 And that which knows, but careful for itself,
 And that which knows not, ruling that which knows
 To its own harm: the goal of this great world
 Lies beyond sight: yet—if our slowly-grown
 And crown'd Republic's crowning common-sense,
 That saved her many times, not fail—their fears
 Are morning shadows huger than the shapes
 That cast them.

It was in this sense that Tennyson wrote that men "half control" their fate. It was in this sense, in 1887, that he expressed himself somewhat as follows: "You must not be surprised at anything that comes to pass in the next fifty years. All ages are ages of transition, but this is a fearful moment of transition. The truth is that the wave advances and recedes. I tried in my "Idylls" to teach men these things and the need of the ideal, but I feel sometimes as if my life had been a very useless life."¹ The touch of despair at the end was doubtless thoroughly genuine, and it helps to reassure us in our belief that this side of Tennyson's

activity, the teaching and the reflective side, was to him the sum of his life work. In this belief was composed the memorial note, as truthful and in a way as unexpected as Mill's famous eulogy of Wordsworth, which James Anthony Froude sent in 1894 to the present Lord Tennyson:—

I owe to your father, he wrote, the first serious reflections upon life and the nature of it which have followed me for more than fifty years. The same voice speaks to me now as I come near my own end from beyond the bar. Your father, in my estimate, stands, and will stand, far away, by the side of Shakespeare, above all other English poets, with this relative superiority even to Shakespeare that he speaks the thoughts and speaks to the perplexities and misgivings of his own age. He was born at the fit time before the world had grown inflated with the vanity of progress, and there was still an atmosphere in which such a soul could grow.

Here, at any rate, in the passage from the epilogue and in the eulogy of Froude, we have evidence which practically contradicts the testimony of Mr. Stopford Brooke to Tennyson's remoteness from the spirit of his own times. Here is nothing alien to that spirit, nothing remote from our future, nor feebler than faith, nor lower than passion, nor less than useful to mankind. Froude would never have subscribed to Mr. Stopford Brooke's view of Tennyson's poetry as "Whiggism in her carriage with a very gracious smile and salute for Conservatism in hers." For here the very soul of truth irradiates the form of beauty, and breathes conduct into clay.

(ii.) THE LESSON OF THE "IDYLLS OF THE KING."

And now it is fitting to go back to Tennyson's own account of the matter, "I tried in the 'Idylls' to teach men these things and the need of the ideal." It is to the "Idylls" accordingly that we are to look in the first place for that social and ethical teaching by which, if Mr. Stopford Brooke is right, Tennyson was removed so far from the faith and hope of his own time. "I do not in the least mind," he says somewhere, "if England becomes a democracy," and he lived to see the practical completion of that forecast. "But sudden change," he went on, "raises a house on sand. If these extreme men had their way the end of the century would be plunged in blood—a universal French Revolution."

Tennyson set his ideals high. What union at any period of history has ever founded itself upon a higher ideal than this which Tennyson puts in the mouth of King Arthur:

I made them lay their hands in mine and swear
 To reverence the King as if he were
 Their conscience, and their conscience as their King,
 To break the heathen and uphold the Christ,
 To ride abroad redressing human wrongs,
 To speak no slander, no, nor listen to it,
 To honour his own word as if his God's,
 To lead sweet lives of purest chastity.

How lofty a programme it was! How sublime

¹ "Tennyson: a Memoir." Vol. ii., p. 337.

an aspiration for righteousness! How secure its articles of foundation: reverence, religiousness, justice, chastity. Taken as poetry or taken as ethics—and it may be stated as an axiom that the greatest writings are both—the portions of the “*Idylls of the King*” which refer to the founding of the Round Table are at once more practical and more ideal than all the visions of equality of the most passionate poets of revolt.

But the union broke down :

And all whereon I lean'd in wife and friend
Is traitor to my peace, and all my realm
Reels back into the beast, and is no more.

This is the point for our consideration in reading any part of the “*Idylls*.” No poet, conscious of his responsibilities, and sensible of the appeal which he makes to the reason and to the emotions of half the civilised world, could have left his readers to the contemplation of this shattered ideal if he had not intended to convey through the failure a lesson higher than of success. Why, we must ask, if we are to preserve our belief in honour and chastity, why did the Round Table break down? Why did Tennyson spend the best years of a beautiful life and the rarest resources of his art in describing a dream which failed? Why did he teach us to associate the name of King Arthur with Prince Albert and dedicate his “*Idylls*” to Queen Victoria if we were to derive no better comfort from the “*Idylls*” than a sense of loss and ineffectiveness? And this, let it be said by the way, is the right spirit for the criticism of poetry. We should never approach it without a certain preparation of mind. The poet has moved on the heights of imagination remote from our noisy plains, and it is at least his due that we should try to interpret his message. The pupil would do better to read no poetry at all than to read it without regard to the pains which went to the making of it. He may sympathise with the man who says, “The world of imagination does not interest me, I do not speak the language of emotion; let me stick to facts which I can measure with my own eye;” but he must not be permitted to grow up in the belief, “There is no world beyond the world of my senses,” nor to read the “*Idylls of the King*” and exclaim, “Behold the failure of chastity! King Arthur and his knights were vain.” Even Mr. Stopford Brooke again, a critic from first to last of the finest discrimination, seems in one place to favour this mistake. “I do not understand,” he writes, “why Tennyson works out a result which seems not only to contradict the possibility of his rule of chastity being observed, but which makes that rule issue in a wholly shameless society. It is as if he despaired of purity; the thing he most insists on is made by him to be an impossible thing. This is an excessively curious conclusion for Tennyson to come to.” It is harder to believe that Tennyson ever came to that conclusion. It must be the critic who is wrong, and we have to try to discover the poet's own meaning in the “*Idylls*,” which were to teach, in his own words, the “need of the ideal,” despite and through the disillusion of the Round Table.

INTERNATIONAL PHONETIC ASSOCIATION.

By DE V. PAVEN-PAYNE.

A VERY interesting *brochure* has been issued by the International Phonetic Association to explain its aims and objects. It has been revised by Dr. E. R. Edwards, the honorary secretary of the Modern Language Association. It contains a history of the Phonetic Association, which was founded in 1886 by a small group of French teachers with Dr. Paul Passy at their head. They had found phonetic transcription a useful instrument for imparting to their French pupils a good pronunciation of English, and wished to popularise the method. The Association not only includes teachers of languages in all parts of the world, but linguists and students who are interested in spelling reform—a subject that is now being considered very seriously in the Ministry of Public Instruction in France.

In 1888 the Association drew up its famous alphabet, which has now become known throughout the world as the best means of indicating sounds. Shortly after an organ was started—*Le Maître Phonétique*—which is printed entirely in these characters by Messrs. Teubner, of Leipzig. Over a hundred books have been issued, and a concise list is appended to the *brochure* of these works in all tongues. A movement is starting in the United States for printing all polyglot dictionaries in this type.

The honorary president of the Association for 1904 is Dr. Henry Sweet, of Oxford; the president is Prof. Viëtor, of Marburg; the vice-presidents are Dr. Lloyd, of Liverpool, and Dr. Jespersen, of Copenhagen. Among the members of committee are Dr. Baker, of Sheffield, Mr. Tilley, of Berlin, and Prof. Vianna, of Lisbon. The members now number about 850, chiefly coming from France, Germany, England, Denmark and Chili. The principles of the Association are that the spoken language should be studied before the literary written language, that teachers should teach sounds before letters, teach grammar inductively, and endeavour to connect the words of the foreign language with the ideas they represent, and not with the words of the mother tongue.

The *brochure* we have mentioned includes an exposition of the phonetic alphabet, in which each sound is always represented by a single sign. This is the ideal form of spelling that the committee appointed by M. Chaumié to consider modifications in French orthography hesitated to adopt. The advantages of such a system are numerous; in teaching foreign languages, to the student working alone at a language, to those transcribing a hitherto unwritten language and in learning to read the mother tongue.

The *brochure* concludes with specimens of phonetic writing in Southern English, Northern English, American English, German, Dutch, Italian, Spanish, French, Portuguese, Norwegian,

Danish, Japanese, and Hebrew. Copies of the *brochure* and all particulars of the Association can be obtained free from the Secretary, Bourg la Reine (Seine), from Dr. Lloyd, Dr. Baker, Dr. Edwards, or myself.

GREEK LITERARY TOPICS.¹

WE know of no writer who has so light and so sure a touch in dealing with literary topics as Dr. Butcher. The author of the masterly translation and criticism of Aristotle's "Poetics" ought to know something about literary taste; but what surprises us is to see how completely Dr. Butcher keeps his learning subordinate to his taste, how refined and delicate is his insight, and how illuminating his expression. These lectures are not composed for the occasion and destined to be then forgotten; they will remain with us long, we believe, and will, we hope, convey to the multitude some adequate reason for the faith that is in us.

The first lectures, "Greece and Israel" and "Greece and Phœnicia," are comparisons, which have to do chiefly with national characteristics and differences. There is less that is new in these; other men have drawn similar distinctions, which are indeed obvious enough. The last two lectures, on "Greek Literary Criticism," have also to some extent been anticipated by the studies of Prof. Rhys Roberts, but they are more general than his, and some good new points are made. For one thing, it is pointed out that the idea of unity in a literary work was a new discovery once, and a Greek made it; the unity was already there in all great works, but it was felt rather than seen. Dr. Butcher's description of the Attic style is admirable:

It is a style scrupulous in the purity of its diction, in avoidance of provincialisms, in the effort to hit the right rather than the approximately right word. It has a certain well-bred elegance which cannot be mistaken for pedantry. It obeys, moreover, the law of reserve: it wins the goodwill of the reader by leaving something to his own intelligence. In the region of feeling it is discreet and guarded. It refuses to speak in accents of emotion where emotion is wanting; but where real passion has to be expressed, the glow of feeling is at once revealed, in the rising tone, and in rhythms in which we seem to overhear the very vibrations of the voice. Still, even in its impassioned and imaginative modes of utterance, Attic prose retains the sense of measure, the precision, the sobriety, which constitutes its essential character. It is just this union of passion and self-restraint, the appeal to the reason no less than to the emotions, that lends to Greek oratory its incomparable force.

But the gems of the collection are the essays on the "Greek Love of Knowledge" and "Art and Inspiration in Poetry." Love of knowledge, the divine curiosity which led them to question all things and prove those that were true, is the key-

note of Greek thought, and their most precious legacy to the world. It is a great theme, and a quality which needs to be kept before the world, because it is just this which makes Greek literature an incomparable means of educating the young. While their minds are still fresh and their enthusiasms undamped, Greek thought is a stimulus which has no like in the world. And in the other lecture the author insists on the truth, so often ignored or denied, that both matter and form are necessary in a literary work. Matter is more important than form, but without a degree of perfection in both, no literary work can belong to the first rank. As to those who prate of art for art's sake, and hold form to be the chief or the only essential, they are fools; and Dr. Butcher, although with more elegance, says so.

THE TEMPER OF THE SEVENTEENTH CENTURY.¹

THIS admirable book consists of the Clark lectures given at Trinity College, Cambridge, in 1902-3, and it possesses exceptional interest as an account of the first lectures on English literature delivered by an American at an English university.

Professor Wendell, in choosing a special period to treat in these lectures, selected the 17th century, because that was the point at which America and England diverged; and he wished to show the manner in which the national temper of England, as revealed in 17th century literature, changed from a temper ancestrally common to modern England and to modern America, and became, before the century closed, something distinctly and specifically English.

Though much has been written about the 17th century in England, this study of its literature, as expressing the national temper at the period of its most conspicuous change, has a manifestly new interest, and being written by an American, with special regard to the divergence of the two nations, it acquires additional charm.

After discussing the rise and decay of the English drama, the strength and weakness of Puritanism, the change from the burst of song of the time of Shakespeare to the calm, measured verse of the time of Dryden, and the gradual development of English prose-writing, Professor Wendell sums up as follows:—

"For good sense, grown to the point of rationally recognising the things which are admirable, and of quietly clinging to them as demonstrable certainties, may be no very edifying phase of human nature. At least, however, it is a sweet, and a sound and a strong, and a safe one. And that is what one feels in the utterances of Dryden's later years. And that, I think, has been the underlying

¹ "Harvard Lectures on Greek Subjects." By S. H. Butcher. viii. + 266 pp. (Macmillan.) 7s. net.

¹ "The Temper of the 17th Century in English Literature." By Barrett Wendell. (Macmillan.) 7s. net.

strength of England from Dryden's time to our own."

Then he quotes one sentence from Cotton Mather's "Magnalia," the one work of 17th century America which has any claim to permanence in English literature. Speaking of Thomas Shepard, an Emanuel man, the first minister of Cambridge in New England, "the sentence in which Cotton Mather keeps his memory alive is this. 'In fine, the character of his daily conversation was a trembling walk with God.' Those words are almost literally contemporary, I believe, with 'Alexander's Feast;' but they belong, in spirit, to the days before the dominance of English Puritanism was broken. Compare them with any stanza of Dryden's chief ode. The contrast tells the story of the parting of your country and of mine, two hundred years ago, and more."

Prof. Wendell has published these lectures in their original form, and the result fully justifies him; for the book maintains the same high level throughout and will be read with great pleasure by all who are interested in books about books.

THE PRINCIPLES OF EDUCATION.¹

THIS is a book which has certainly been written slowly, and should be read slowly.

The book itself shows that the author deals with his subject from first-hand experience, and that he has been a part of all that he has seen and describes. He speaks as a teacher, a trainer of teachers, and an accomplished philosopher; whereas most books on teaching have been written by excellent (or pestilent) persons who have acquired only a fraction of these qualifications.

One might fairly complain at times that the book is a little long, and that the writer has expanded as he would in his lecture room what is with sufficient point and impressiveness set forth more briefly in some of the books to which he directs attention. This quality, however, which will make an ordinary reader a little impatient of Prof. Raymont's solemn exhaustiveness, will carry the earnest student, for whom no doubt he mainly writes, over all the details which he should certainly ponder.

The writer really takes a middle path between the empiricists and the psychologists. He is himself, however, certainly more empiricist than psychologist in education, laying it down quite rightly, as all good empiricists do, that educational theory must seek the help not of psychology only, but also of some half-a-dozen other sciences; and his work is a very good example of this kind of treatment.

It would be hard to say in what part he is best. He deals as he should with the fruitful doctrine of interest, as against the sterile doctrine of faculties; he makes an excellent case against education as

mere discipline, like the good teacher we feel he must be; his examination of the common maxims of methodical procedure is sensible; he gives first-rate advice on the choice of text books; he has treated the general question of examinations with a simplicity and fulness which show that he has mastered his Latham and given the subject a good deal of independent thought; and he condescends with good reason and effect to discuss school furniture. In all these, and a hundred other like practical matters, Prof. Raymont is a trustworthy guide.

On one or two points some people will think him hardly fully informed. For instance, he certainly has not mastered the case of the defenders of the classical gymnastic, though it seems likely that his conclusions are sound enough. He treats historical grammar rather cavalierly, and he betrays a respect for grammatical analysis which very few scholars will share, and which his own reasoning does not bear out.

Very rarely he is a little careless. He would not else speak of "bad scientific teaching," nor of "Dr." Jowett; though to the contentions diversified by these small errors no exception can be taken.

On the whole, Prof. Raymont's book is a very good book, and it helps to show that solid and substantial work is being done by the people who are responsible for the training of our teachers.

THE NATIONALISATION OF TRAINING COLLEGES IN SCOTLAND.

THE Committee of Council on Education in Scotland has just issued an important Minute providing for the establishment of provincial committees for the training of teachers in connection with the four University centres. The importance of this step as an instalment of educational reform can hardly be over-estimated. For many years the efforts of all interested in education have been directed towards harmonising and co-ordinating the various parts of the educational system in order to prevent the overlapping of agencies and the waste of effort and energy that at present exist. The position of the training colleges with their denominational management has all along been recognised as a vital factor in this problem. The personality of the teacher is, after all, the most important element in any educational system, and the question of his training goes to the very root of educational efficiency. Last year's Education Bill gave rise to much adverse criticism, because it failed to deal with this great question. It probably never occurred to anyone outside the Education Department itself that this difficult and thorny problem could be solved satisfactorily without the intervention of Parliament. Legislation by minutes and circulars has always been a feature in the Department's administration, but no one imagined its power could stretch so far as to set up by

¹ "The Principles of Education." By T. Raymont. 381 pp. (Longmans.) 4s. 6d.

a stroke of the pen the training of teachers on a national basis. The present Minute, in contradistinction to many of its predecessors, has been received with hearty approval by all sections of the community. Whatever elements of danger there may be in any department possessing and wielding such far-reaching powers, on the present occasion, at least, all are constrained to admit—

That what is best administered is best.

The Minute has still to run the gauntlet of parliamentary criticism, but it may fairly be assumed that any alterations that are made will only be on matters of detail. The scheme, as a whole, is so admirably planned that it disarms the hostility of the most captious critic, and the Government are to be congratulated on the courageous spirit and the comprehensive conception with which they have tackled this great question.

The position of denominational training colleges in a national system of education has long been recognised as anomalous and indefensible, and has remained unchallenged till now solely because these colleges possessed little trace of sectarianism, save in their name. Yet the drawbacks of denominational management, in view of the constantly recurring demands for greater accommodation and better equipment, have recently become increasingly evident; but a further argument for the State taking over these training colleges is found in the fact that these institutions have been financed for many years almost entirely from the national purse. The total income of the six Presbyterian colleges for the year 1902 amounted to £56,878; of this amount £46,143 came from Government, and £9,767 from the fees of students, leaving only £968 to be raised by the churches. The whole of this sum was contributed by the United Free Church for the three colleges under their control, while the Church of Scotland had all the privileges of management over three colleges without contributing a single penny to their support.

The recent judgment of the House of Lords in the "Church Case" precipitated the consideration of the whole subject. By that decision the directors of the three United Free Training Colleges were compelled to hand over these buildings to the representatives of the legal Free Church. As it is notorious that hardly a single student in these institutions belongs to the ecclesiastical body granted legal control, the absurdity of the whole position necessitated immediate action on the part of the Government. The new Minute was drawn up after frequent conferences with the various churches interested and Mr. Graham Murray, in a prefatory memorandum, pays a well-merited tribute to the great work that has been accomplished by the churches in the sphere of education, and to the notable public spirit they have displayed throughout the present negotiations. The new Minute, it is true, does not abolish the denominational colleges. It merely provides for their transference on reasonable terms to the newly constituted training committees. They may still continue under their present management, but the financial conditions,

it may safely be assumed, will be closely scrutinised and a substantial contribution to the college funds will be demanded from any body that determines to remain outside the national system. But, after all, the most valuable feature in the new Minute is not the nationalisation of the training colleges. That merely follows as a necessary accompaniment of the main object, which is, as explained in the memorandum, to enlarge and improve existing facilities for the training of teachers, and at the same time ensure that that training is brought into close connection with university organisation. This linking of the training of teachers with university life should secure for Scotland a body of teachers ideally qualified for the duties of their office. The greatest misfortune that could befall any profession was to have its members segregated at too early an age into special institutions where the outlook was bound to become circumscribed and narrowed by constantly dwelling on the details of professional work. Self-centred as the training colleges have hitherto been, they could not fail to encourage and develop those prejudices that are so generally charged against the profession. Contact with the liberal culture and full intellectual life of the universities will enlarge the mental horizon and broaden the sympathies of every member of the profession, and make them infinitely more capable both as teachers and as citizens. Sir Henry Craik has emphasised this aspect of the situation in an admirable speech at Dundee, where he said: "The teachers will now be a profession not trained alone or in seclusion, but side by side with the great intellectual interests of the country, recruited from the same source as the other learned professions, widened in their intellectual range, and stimulated in their energies by the wider sympathy that will thus be gained."

It should further be noted that the training of secondary-school teachers is explicitly laid down among the duties of the new committees. This is the first official recognition in regard to higher education of the value of a principle that has justified itself so completely for over sixty years in the sphere of primary education.

The chief provisions of the new Minute are given in the following abstract:—

CONSTITUTION OF THE TRAINING COMMITTEES.

(1) In connection with the Universities of St. Andrews, Glasgow, Aberdeen and Edinburgh respectively, a committee shall be established for the training of teachers.

(2) The composition of each committee is set forth in schedules appended to the Minute, but in every case provision is made for the representation of (a) the University, (b) the School Boards in the province served by the University, (c) the technical schools and colleges, (d) the managers of secondary schools, (e) the teaching profession, elementary and secondary, and (f) the denominational bodies which transfer their training colleges to the new committees. H.M. Chief Inspector for the district will be the Department's assessor on the committee, but shall not be entitled to vote.

POWERS AND DUTIES OF THE COMMITTEES.

(1) Each committee shall have power to provide, whether in university classes or otherwise, courses of instruction suitable for

the training of teachers (including teachers for secondary schools). These courses may include, if the committee so determine, instruction in religious subjects. They shall be held in towns where a university or a part of a university is situated, but the committee shall also have power to institute, with the consent of the Department, subsidiary courses of training at approved centres in connection with either a secondary or a higher-grade school.

(2) Each committee shall further have power to acquire by purchase, or to secure by lease, suitable premises for the purpose of the aforesaid training, and to provide the necessary apparatus and equipment. A committee may also establish or may subsidise on such conditions as may be agreed upon, subject to the approval of the Department, one or more hostels for the residence of the students under their charge, and may make such maintenance allowances to individual students as may be deemed necessary. But each student who receives such assistance shall be bound to render service in such class of schools and for such periods as may be from time to time prescribed by the said committee.

(3) Each committee may receive for training, upon such terms and conditions as to payment of fees or otherwise as may be deemed expedient by the said committee, any persons who are duly qualified according to the regulations of the Department for the time being.

(4) Each committee shall have power to appoint officers at suitable salaries either for purposes of instruction or of discipline, and to prescribe courses of studies for the students collectively or for individual students, as well as to make regulations for the proper behaviour and conduct of the students.

(5) It shall be a condition of Parliamentary grant to any School Board or of a grant under any minute of the Department to any endowed school, that the School Board, or the governors, as the case may be, shall grant to the committees instituted under this minute such access to their schools and such facilities for practice in teaching as may be agreed upon or as may, if necessary, be determined by the Department, who shall also determine what payment shall be made for the use of such schools.

(6) From and after July 31st, 1905, grants for the training of King's students shall cease to be payable to the existing local King's Studentship committees, but the committees constituted under this minute shall come in place of the said local committees as regards any responsibilities undertaken by the said local committees towards students in training, or towards officers employed in their instruction, and for that purpose each of the committees now constituted shall receive from the corresponding local committee any balance of funds derived from the grants of the Department remaining in the hands of the said local committee at the said date.

TRANSFER OF TRAINING COLLEGES.

(1) In the event of the body of management of any existing training college or colleges resolving to demit its powers of management in favour of any of the committees constituted under this minute, and to transfer to the said committee the college premises and equipment, the committee shall have power to receive the same, and to pay therefor such purchase money or annual rent as may be agreed upon, provided always that no payment shall be made for the purchase or rent of any premises which are held in trust by the said body of management for the purpose of training teachers.

(2) In the event of any such transference, the committee shall be bound to take over the existing staff of the training college or colleges concerned on the terms of their present engagements, but shall be at liberty to dispense with the services of any officer upon giving due notice, provided always that in the event of its being resolved to dispense with the services of any officer who

has been employed on the staff of any college for a period of ten years or over, the committee shall be bound to grant him such pension or retiring allowance as he might reasonably have looked for had he continued in the service of the transferring body of management.

(3) When a training college so transferred is the property of, or is held in trust by, the representatives of any Church or religious denomination, it shall be a condition of such transference that provision shall be made therein for religious instruction in accordance with the views of the said Church or denomination, to an extent not less than that which is at present customary in the college so transferred, which instruction may either be provided by the accepting committee or the transferring Church or denomination as may be agreed between them, and further, where the accepting committee undertake to provide such instruction on their own behalf, it shall be a condition that they also undertake to afford adequate facilities for the periodical inspection of the said instruction by duly accredited representatives of the transferring Church or denomination under conditions to be determined by the Department.

(4) Where a training college is transferred as set forth in the preceding section, the accepting committee shall co-opt, as fully privileged members, representatives of the said Church or denomination, as provided in the annexed schedule.

(5) Each local committee shall appoint an executive officer, who, subject to the instructions of the committee, shall discharge the functions of director of studies, and who, with such assistance as may be necessary, shall be responsible to the committee for the due observance of the committee's regulations as to the conduct of the students.

FINANCE.

(1) The committee shall receive such grants as may be allowed by the Code in respect of students who fulfil the conditions prescribed by the Code for the receipt of Parliamentary grants for the training of teachers (Articles 83-99 of the Code). Such further sum as may be required to balance the expenditure approved by the Department shall be provided from the balance of the grant remaining undistributed under Article 3 of their Lordships' minute of 25th April, 1904.

(2) Before the 1st October in each year, or such other date as the Department may from time to time determine, each committee shall submit to the Department an estimate of their expenditure, whether capital or other, for the next financial year, and no expenditure shall be incurred by the committee till that estimate has been approved by the Department, nor shall any expenditure in excess of that estimate be incurred without the previous sanction of the Department.

GENERAL.

(1) So long as this minute shall remain in force, members appointed or elected to serve on the several committees under the provisions of the respective divisions of the annexed schedule shall remain in office until such date as is fixed by the Department for the appointment and election of new committees, provided that new committees shall, so far as practicable and convenient, be appointed and elected once, and not oftener than once, in every three years. Any casual vacancy caused by the death or resignation of any member shall be filled up according to the tenour of the respective divisions of the annexed schedule by the body or bodies who appoint or elect such member.

(2) The powers of the committees under this minute shall be exercised subject to regulations prescribed by the Department, and laid upon the table of both Houses of Parliament.

This minute shall not come into force till it shall have been submitted to Parliament, and shall have lain on the table of both Houses for at least one calendar month, and all modifications of the same which may be proposed subsequently shall be submitted to Parliament in like manner.

EXPERIMENTAL GEOGRAPHY.

By A. T. SIMMONS, B.Sc.(Lond.)
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II.—TEMPERATURE MEASUREMENTS.

A CONSIDERATION of what can be learnt from measurements of temperature at different times in various parts of the world must, of course, be preceded in a course of geography by practical exercises designed to familiarise the pupils with the construction and use of thermometers, with thermometric scales, and with the methods of recording temperatures. The object of the following selection of exercises is to show how the temperature observations annually accumulated at observing stations may be pressed into the service of the teacher of geography who wishes to make clear to his class that geographical principles are based upon actually observed facts.

MEAN TEMPERATURE.

The methods of determining temperature having been understood, it becomes necessary to learn what uses are made of the many observations of temperature at different observing stations in various parts of the world.

It is possible to show how from these temperature records important facts as to the climate experienced in different places are determined :—

(1) At a certain place the maximum and minimum temperatures on the dates shown were as given below. Find the mean temperature of the following days :—

Date.	Maximum Temperature during day.	Minimum Temperature during day.	Mean Temperature.
March 1 ..	53°	35°	
" 8 ..	51°	40°	
" 15 ..	53°	40°	
" 22 ..	48°	34°	
" 29 ..	54°	41°	

(2) Find the mean temperature at Greenwich for each of the days of the week ending November 7th, 1902, from the following figures. Then determine the mean temperature for the week.

Date.	Maximum Temperature.	Minimum Temperature.	Mean Temperature.
November 1 ..	51°	42°	
" 2 ..	52°	36°	
" 3 ..	51°	20°	
" 4 ..	49°	28°	
" 5 ..	39°	32°	
" 6 ..	41°	30°	
" 7 ..	46°	30°	

Care must be taken to distinguish between "mean temperature" and "average mean temperature." In the last exercise you have determined the mean temperature for certain November days in 1902, but, if these results are compared with similar results on the corresponding November days of other years, a difference is observed. It is customary to take the average of the mean temperatures of a given day for a number of years, and the result is called the *average mean temperature* for the period of years taken.

(3) Using the observations in the following table, determine the difference for each day between the mean temperature and the average mean temperature at Greenwich.

Date.	Maximum Temperature.	Minimum Temperature.	Mean Temperature.	Average mean Temperature for 50 yrs.	Difference.
1903-					
January 1 ..	39°1'	29°5'		37°	
February 1 ..	46°3'	31°3'		38°	
March 1 ..	50°1'	35°7'		40°	
April 1 ..	50°6'	38°4'		45°	
May 1 ..	55°4'	44°2'		50°	
June 1 ..	82°6'	51°1'		57°	
July 1 ..	78°2'	53°2'		66°	
August 1 ..	71°4'	54°0'		69°	
September 1 ..	82°0'	53°2'		59°	
October 1 ..	68°5'	50°4'		54°	

The terms "mean temperature" and "average mean temperature" are used not only when describing the temperature of days, but also when months are concerned, and a similar distinction is drawn in the latter case as in the former.

(4) The following table gives the average mean temperature for each month of the year at Greenwich :—

January ...	37° F.	July ...	62° F.
February ...	39° F.	August ...	61° F.
March ...	41° F.	September ...	55° F.
April ...	45° F.	October ...	50° F.
May ...	53° F.	November ...	43° F.
June ...	59° F.	December ...	40° F.

Representing temperatures by vertical distances and months horizontally on squared paper (as in Fig. 1), plot a curve showing the variation in temperature at Greenwich throughout the year. From the curve write down which is the hottest month and which the coldest month. In what months are the longest and the shortest days ?

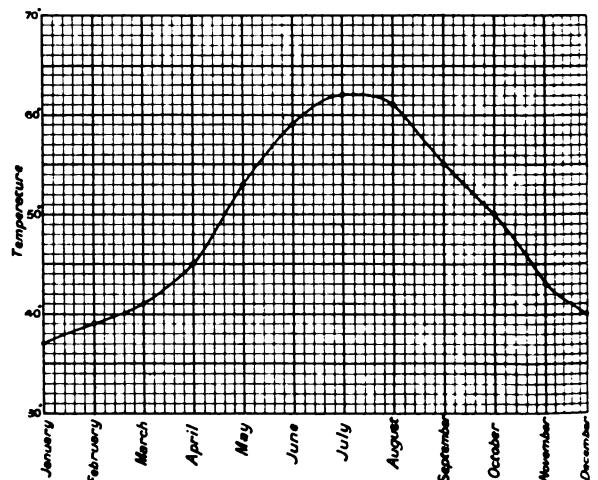


Fig. 1.—Mean yearly variation in temperature at Greenwich.

(5) The following table gives the average mean temperature for each month of the year at Vienna according to Hann :—

Month.	Average Mean Temperature.	Month.	Average Mean Temperature.
January ..	°C.	July ..	°C.
February ..	-1°3'	August ..	20°3'
March ..	0°4'	September ..	19°6'
April ..	4°2'	October ..	16°1'
May ..	10°0'	November ..	10°5'
June ..	15°1'	December ..	3°7'
	18°6'		-0°8'

As in Exercise 4, plot a curve like that showing the variation in temperature at Greenwich throughout the year. Compare the shape of the curve with that obtained in Exercise 4. Is there a similar rise and fall of temperature throughout the year in different parts of the earth?

(6) Make a note of your results, and try later to explain them.

ISOTHERMAL LINES OR ISOTHERMS.

(Use blank maps for the exercises requiring them.)

An *isothermal line*, or an *isotherm*, is a line drawn on a map connecting places having the same average mean temperature for the month for which the lines are drawn.

(7) In this country which month is the coldest and which the hottest (Ex. 4). Refer to the temperature maps in your atlas; for what months are isothermal lines shown? Why are these months selected?

(8) From the July temperature chart of the world in your atlas make three lists, each of six places: (a) where the average mean July temperature¹ is 80°; (b) where the average mean July temperature is 64°; (c) where the average mean July temperature is 48°.

(9) From the same chart write the names of four districts where the average mean July temperature is above 96°.

(10) Name from the same chart as many countries as you can, (a) where the average mean July temperature is lower than 48° and higher than freezing point; (b) where there is about the same average mean temperature as in Great Britain.

(11) Observe on your temperature map that all parts of the world where the temperature is highest, that is where the air is hottest, are coloured dark red. The dark red patches are enclosed by the isothermal line marked 80°, and all parts of the countries and ocean enclosed by this line have a temperature above 80°. In July are these dark red patches mostly above or below the equator? What name is given to the parallel of latitude, shown by a dotted line in the chart, which passes through all these dark red patches? Where is the sun overhead at mid-day at this time of the year?

(12) In January are the dark red portions above or below the equator? What name is given to the parallel of latitude, shown by a dotted line on your chart, which passes through the January dark red patches? Where is the sun overhead at mid-day in January?

(13) On a blank map of the world draw in the July isothermal lines for 80°, 64°, and 48° in the northern hemisphere, and then add with a coloured pencil or with a dotted black line the same isothermal lines for January. In what direction do the isothermal lines appear to have travelled in the six months?

ISOTHERMS AND PARALLELS OF LATITUDE.

If the earth were completely covered with water the average mean temperature of any place for a given month would depend entirely upon its distance from the equator, *i.e.*, upon its latitude.

Place.	Mean Annual Temperature.	Latitude.
L. Tsana (Abyssinia)	88°	
Rio de Janeiro	79	
Cairo	72	
Salonica	63	
Marseilles	57	
Paris	51	
London	49	
Moscow	40	
Hammerfest	34	
Melville Island (Canada) ..	25	

¹ The teacher may have to modify the numbers given in this Exercise, as atlases differ.

Fill in column iii. in the above table. State generally in what way you think the mean annual temperature of a place depends upon latitude.

(14) Examine a temperature chart of the world for July. Compare the isothermal line for 48° with the parallel of latitude 40° S. At what places does the isotherm leave the parallel of latitude? Is there any land near?

(15) As in the last exercise, follow the course of isotherm 64° with the parallel of latitude 40° N. Compare the course of the isotherm, so far as the parallel of latitude is concerned, across the continent of America and across the Atlantic Ocean; also its course across Europe and Asia with that across the Pacific Ocean.

TEMPERATURE AND PROXIMITY TO THE OCEAN.

Mean Monthly Temperature.

BIRMINGHAM, (Lat. 52° 30' N.)

Jan.	Feb.	Mar.	Ap.	May	Ju.	Jy.	Aug.	Sep.	Oct.	Nov.	Dec.
37°6	39°4	42°0	46°9	52°3	58°8	61°5	60°5	56°2	48°8	42°8	38°5

LOWESTOFT (Lat. 52° 29' N.)

38.6	39°8	41°5	46°2	51°2	57°5	61°1	61°0	58°0	51°1	44°1	39°5
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CHELTENHAM (Lat. 51° 54' N.)

39°6	41°1	43°2	48°6	54°1	60°3	63°0	62°1	57°6	50°3	43°7	40°8
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ST. DAVID'S (Lat. 51° 53' N.)

41°4	41°6	43°0	47°4	51°2	56°8	59°2	59°6	56°8	51°4	46°1	43°2
------	------	------	------	------	------	------	------	------	------	------	------

(16) The above table gives the mean monthly temperature at two pairs of places in England and Wales on the same parallel of latitude; one place being near the sea and the other inland.

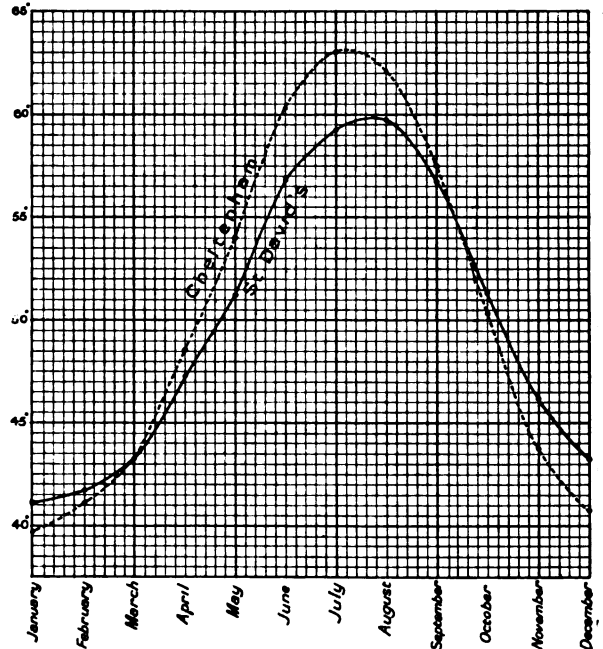


Fig. 2.—Graphic representation of relation between temperature and proximity to ocean.

As in Fig. 2, plot curves showing the rise and fall of temperature throughout the year at each of the places of the pair given. It will be convenient to represent temperatures by vertical distances and to allow the side of a square for each half degree.

Are temperatures at places near the sea more equable than those of inland places of the same latitude, or otherwise? At which of the places in the case of each pair do you find the highest summer temperature and the lowest winter temperature?

ANNUAL RANGE OF TEMPERATURE.

By the *annual range of temperature* is meant the difference between the maximum and minimum temperatures for the year.

Place.	Annual Range of Temp.	Latitude.	Position as regards Ocean.
San Francisco	10°		
Denver ..	50°		
Philadelphia..	40°		
Caceres ..	20°		
Bokhara ..	50°		
Gobi Desert ..	60°		
Japan ..	40°		

(17) The above table gives approximately the annual range of temperature at seven places. Look them up in your atlas, and note the latitude of each place and fill in column iii. Then describe the places as near or far from the sea in column iv.

(18) The annual range of temperature north of Yakutsk is 120°, while that of Tobago in the Lesser Antilles and of Guayaquil is only 5° of temperature. Give the latitude and longitude of these places, and account for the difference in the range of temperature.

Annual Ranges of Temperature.¹

Place.	MONTH.											
	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.
Verkhoyansk (Siberia)	-51.4	-46.5	-35.2	-15.8	-1.1	9.4	15.6	9.3	0.4	-18.1	-39.7	-48.0
Batavia ..	25.3	25.4	25.8	26.3	26.4	26.0	25.7	26.0	26.3	26.4	26.1	25.6
Patna ..	15.9	18.4	25.1	30.1	31.2	30.8	29.0	28.7	28.6	26.2	21.0	16.9
Tokyo ..	4.0	1.6	3.3	8.1	12.2	17.0	18.5	24.3	26.7	22.6	14.7	9.1
Cape Town	20.8	20.8	16.3	17.3	14.6	13.1	12.6	13.2	14.2	16.1	18.0	19.8
Cairo ..	12.2	13.3	16.8	21.6	25.2	28.3	29.0	28.0	26.0	23.0	18.8	14.7

(19) Are the temperatures in the above table Centigrade or

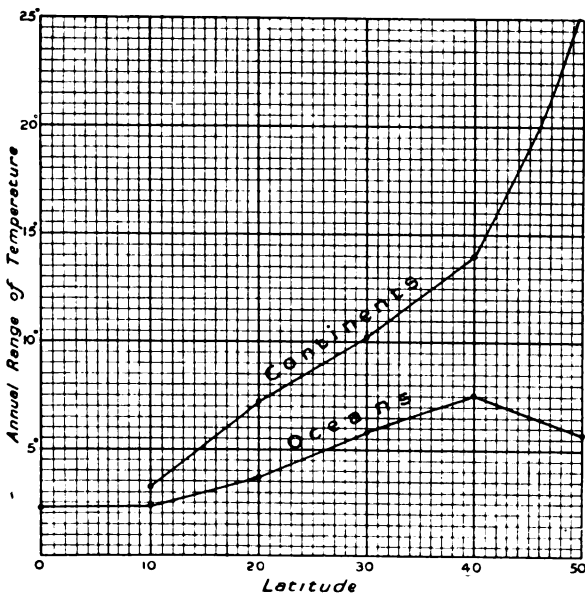


Fig. 3.—Graphic representation of effect of oceans and of continents on temperature.

Fahrenheit? Plot them all on the same sheet of squared paper. Look out the places in your atlas. Can you explain *why* their annual ranges of temperature differ?

¹ From Schimper's "Plant Geography." (Clarendon Press.)

Annual Ranges of Temperature of Ocean Water and of the Air over the Land. (Hann.)

Latitude	Equator	10°	20°	30°	40°	50°
Oceans	2.3°C	2.4°C	3.6°C	5.9°C	7.5°C	5.6°C
Continents	—	3.3°	7.2°	10.2°	14.0°	(25.4°) ¹

(20) Examine the above table and decide whether the annual range of temperature is greater over the oceans or over the continents. Write down what conclusion the numbers in the table suggest as to the climates of places near the ocean or situated on the continents.

(21) Plot curves showing the effect of the oceans and of the continents on the climate of places of various latitudes. Allow horizontal distances, as in Fig. 3, to represent latitudes, and vertical distances the annual ranges of temperature.

TEMPERATURE AND HEIGHT ABOVE THE SEA.

Another cause affecting the mean monthly temperature of a place is its height above sea level. The following exercises will serve to show how the altitude of a locality influences its mean monthly temperature.

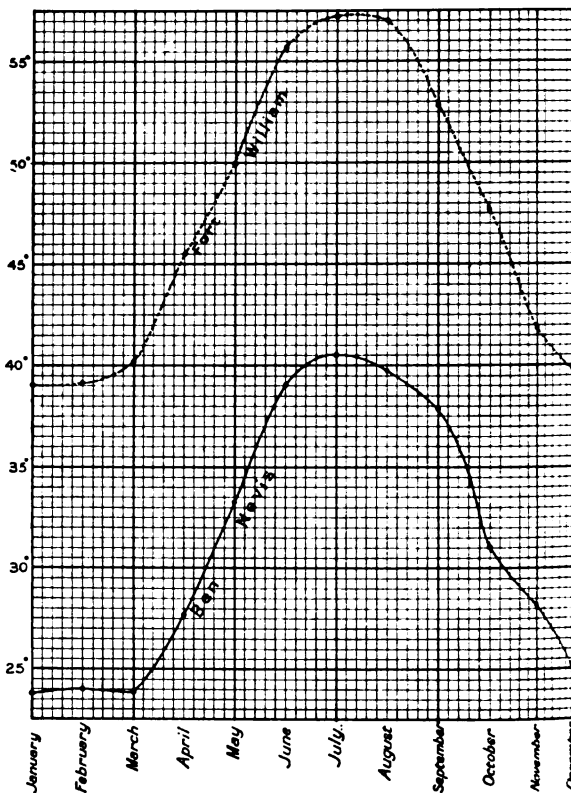


Fig. 4.—Graphic representation of relation between temperature and altitude.

Mean Monthly Temperatures.

At Fort William Observatory, latitude 46° 49' N., height above sea 42 ft.; and Ben Nevis Observatory, latitude 46° 48' N., height above sea 4,407 ft.

FORT WILLIAM.											
Jan.	Feb.	Mar.	Ap.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
39.0	39.1	40.1	45.5	50.0	55.7	57.3	57.0	53.3	47.6	41.8	39.9

¹ Northern latitude only.

BEN NEVIS.

Jan. Feb. Mar. Ap. May June July Aug. Sep. Oct. Nov. Dec.

23.8 | 23.9 | 23.8 | 27.7 | 33.3 | 39.0 | 40.5 | 39.8 | 37.9 | 31.0 | 28.1 | 25.0

At Sidmouth, Devon, latitude 50° 41', height above sea 148 ft.; and Princetown, latitude 50° 32', height above sea 1,359 ft.

SIDMOUTH.

Jan. Feb. Mar. Ap. May June July Aug. Sep. Oct. Nov. Dec.

41.2 | 42.5 | 43.3 | 48.2 | 52.3 | 57.9 | 60.6 | 60.7 | 57.6 | 51.7 | 46.2 | 42.9

PRINCETOWN.

Jan. Feb. Mar. Ap. May June July Aug. Sep. Oct. Nov. Dec.

35.2 | 35.8 | 38.0 | 42.5 | 47.0 | 53.5 | 55.3 | 55.1 | 52.2 | 45.8 | 40.2 | 37.0

(22) Plot curves for each of the pairs of places given above in which the latitude is about the same and the altitude varies greatly. As in Ex. 4, represent temperature by vertical distances—the side of a square representing half a degree—and represent months by horizontal distances. An examination of Fig. 4 will show you how exactly to do this.

(23) Examine the curves you obtain in this way, and try to frame a rule explaining how the temperature of a place is affected by altitude.

CONFERENCE ON SCHOOL HYGIENE.

A CONFERENCE on School Hygiene organised by the Royal Sanitary Institute, with the object of securing a widespread interest in and paving the way for the International Congress which is to be held in London in 1907, was held at the University of London on the four days, February 7th to 10th. In connection with the conference a successful exhibition of school building and furnishing appliances was held. Over a hundred educational authorities were represented at the conference by delegates, and the meetings throughout were well attended. The discussions were of a practical and helpful kind, and there was no lack of speakers possessing special knowledge of the hygiene of schools and scholars.

Sir A. Rücker, the president of the conference, delivered the opening address on the co-ordination of the teaching of hygiene. He said that amid the welter of conflicting opinions with regard to education, hygiene has been steadily making its way to a position of more importance in educational curricula. Sanitary science has long occupied a prominent position in this country, so that now the determination with which we insist on sanitary precautions strikes the foreigner with amazement. The President proceeded to give reasons for assurance that the claims of hygiene in elementary school education are being widely recognised, but directed attention to a curious difference between the official theory of the Board of Education as to what is desirable in elementary schools and the practice followed in the education of the richer classes. "I believe," he said, "in the study of the elements of science, hygiene included, being carried on side by side with the study of language and arithmetic, from a very early stage. I would discourage a too exclusive reliance upon compulsory examinations in the promotion of the study of hygiene." The knowledge of school hygiene is required by authorities granting diplomas of education, and Sir Arthur Rücker said that the University of London will insist that the elements of education shall include not merely the study of other forms of life, but some knowledge of the dangers by which we are surrounded, and of the means of keeping them at bay. The University will insist that those to whom young lives are entrusted shall learn, as part of their business, the outlines of hygienic science.

PHYSICAL AND MENTAL DEVELOPMENT DURING SCHOOL LIFE.

The first discussion was presided over by Sir Lauder Brunton, the president of the committee of the International Congress on School Hygiene. Miss A. J. Cooper, of Oxford, opened the discussion. She said the development of scientific research during the nineteenth century has given us a mass of detailed knowledge concerning physical and mental growth, and the various workers in this field have become more and more specialists as it became necessary to differentiate and bring into order the various classes of observed facts. She proceeded to enquire what is the minimum of knowledge which should be the common property of all classes of the community? What is the further knowledge which should be required from all those who are directly concerned with school education as teachers, inspectors, examiners, and so forth? We much need, she continued, that body of ordered knowledge which should guide us in the work of education. It exists in the works of specialists; our task is to make it available as effective knowledge for all who are engaged in school work, and with such an equipment we may expect our teachers to carry on and develop the study of education as the great force which gives life and power to the whole community.

During the course of the discussion Sir John Cockburn urged that, from the point of view of national efficiency, character is more important than intelligence. The world is so correlated that a nation without much originality can assimilate the inventions and resources of civilization; but character cannot thus be assumed by imitation. Mr. J. G. Legge, dealing with the question of physical development, said that to worry a child too much about thinking while it is at drill or at exercise seems to him as wrong as to ignore thinking altogether: they are both extremes. Children should thoroughly enjoy drill or exercise. Drill and exercise ought to be recreative in every sense of the term. Miss McMillan maintained that the teachers of swimming should be the teachers responsible for the physical education of the young. They should be trained physiologists, who, though not able, perhaps, to diagnose every disease (they should be experts more or less on skin disease), should nevertheless have eyes trained to detect every abnormality of structure, every sign of weakness or indication of serious danger, and to interpret that writing which nature has not failed to indite on every human face and form. Dr. Dukes eloquently urged the need of more sleep for boys and girls, and Mrs. Woodhouse described her experience in trying to secure an adequate physical development of girls in schools.

At the conclusion of the discussion a resolution was adopted asking the Council of the Sanitary Institute to bring the following propositions to the notice of education authorities:—

- (a) That for younger scholars, at all events, there should be no home-lessons after school hours.
- (b) That the periods for school lessons should be short (twenty to fifty minutes), and that there should be increasing intervals of not less than five minutes between successive lessons, for recreation, taken if possible in the open air.
- (c) That suitable breathing exercises should be practised at least once during each school session, in the open air or in well-ventilated rooms.
- (d) That organised drill should be regularly practised by the pupils in every school.
- (e) That the acquisition of swimming should be encouraged in every school, and should be taught to the pupils wherever practicable.
- (f) That an efficient system of fire drill should be compulsory in every school (and in each "house" of boarding schools

conducted on the house system), and should be practised at least three times in the course of each school term.

(g) That ample hours of sleep, according to age, are essential to the well being of growing boys.

PHYSICAL INSPECTION.

Dr. Chalmers, in opening the discussion, dealt with the physical inspection of school children in relation to public health administration. He said that, while the primary object of physical inspection is to discover the fitness or unfitness of the child for school life, and to devise means for lessening unfitness, its importance did not end there, for the child physically unfit for elementary education will be unfit also for industrial education. He gave statistics of the physical condition of school children according to the economic position of the family, and drew several conclusions, including the following:—

(1) That the limited available measurements of school children appear to indicate: (a) that their physical development is related to an economic standard of the family life, which may readily be expressed; (b) that their nutrition is similarly graded; and (c) that their mental efficiency, as estimated by the masters, falls into line with both.

(2) That this lowering of the mental and physical condition of childhood tends to the production of inefficiency in the adult, from which again the vicious cycle is begun.

(3) That much educational energy is meanwhile misspent in endeavouring to educate children who are physically unfit.

(4) That the most trustworthy way of ascertaining the distribution of underfed children is by a systematic inspection of schools.

Dr. Kerr said that the question of nutrition is not merely a question of feeding. Overcrowding is an important factor. A child living in a one-roomed tenement may, by good food, be fattened and rendered big and heavy, but good educational results will not be obtained. With regard to infectious diseases, he said medical inspection is required and careful training in hygiene of the school teacher. Dr. Newsholme considered that nurses should be employed to make preliminary inquiries, and that the doctor's province is in organising and supervising. Dr. Helen Wilson said that the presence of the mother at the medical examination of girls in secondary schools should be insisted upon, and that before a scholarship can be held by a girl, physical as well as mental fitness should be shown.

Resolutions were adopted affirming that H.M. Inspectors of schools should be qualified in hygiene and sanitation, and be familiar with the development of child life; that properly qualified *women* inspectors for infants' and girls' schools of all grades, for pupil teachers' centres, and for training colleges should be appointed; that the inspection of domestic subjects should be entrusted to women; that no child should be permitted to begin formal instruction in school classes under the age of six years; that there should be regular and systematic medical inspection of children in schools of all grades.

BUILDING AND EQUIPMENT OF SCHOOLS.

Sir William Anson presided at this discussion, and during the course of his introductory remarks said, as regards the teaching of hygiene, it is necessary to consider what in the present state of instruction in the subject teachers can be expected to teach and what children can be expected to learn; and to bear in mind that in instructing children on this subject ideas and language must alike be of the simplest possible description, in order that the teaching may be thorough, and may not be misleading owing to the effect of strange ideas, couched in a still stranger language, upon the youthful mind.

Sir Aston Webb opened the discussion. He urged the para-

mount importance of sun on all the rooms and free circulation of air round all the buildings. The time will soon come, he said, when it will be thought as impossible to build a school round a cloistered quadrangle as a few years ago it was thought impossible to do anything else. The æsthetic surroundings, which have so much to do with the health and happiness of children, must not, he urged, be overlooked. Mr. A. F. Somerville, in a paper on ventilation of schools, held that the question of ventilation and sanitation should be left to properly qualified persons and not to his Majesty's Inspectors. Mr. J. Graham, inspector of schools for the West Riding County Council, contributed a paper discussing hygienic school furniture. He said that, as regards the desk problem, the experiments in connection with the hygienic Swiss desks have produced a series of desks now regarded as satisfactory. Each desk can be readily adjusted: (a) to give the right height for the length of the pupil's body; (b) to give the natural slope required for drawing, reading, and writing, and (c) to enable pupils alternately to work sitting and standing, with the desk top quite flat, or at a slight slope, at the required height. Mr. J. R. Kaye, medical officer to the same body, dealt with school-books from the hygienic point of view, dealing more particularly with the question of suitability of type and paper. As regards type and printing, he said, we should have black ink, clear type, well leaded vertically, but with normal lateral extension. The width of the page should not be too great, and the longer the line is the greater should be the vertical distance between the lines.

A discussion on the sanitary inspection of schools followed.

TRAINING OF TEACHERS IN HYGIENE.

Sir William Collins presided, and in his opening remarks expressed his cordial sympathy with the desire for a closer association of medicine and teaching. Prof. C. S. Sherrington opened the discussion, and said that it is in youth that irreparable harm to health is done. To fortify this first line of defence the school must have knowledge of the laws of health, and for this the teacher must know what the body is. Every school teacher should know something of the chemistry of food as one of the general conditions influencing health and development, just as does air itself. Essential to the understanding of the laws of health is also some knowledge of physical science. Ventilation and drainage cannot be really understood without such knowledge. Neither can the care of the great sense organs, the eye and ear. Pure physical defects of eye form more than half of all school troubles in eyesight. Our present school life is under grave suspicion of engendering much harm to sight. Much of the fatigue of the class-room is eye fatigue. The senses are the avenues to the mind, and the sense organs of the child-pupil must be objects of practical observations. We do not want, said Prof. Sherrington, the teacher to do the work of the medical man, but he should be able to co-operate intelligently.

During the course of the discussion Prof. Kenwood urged that the training of the teacher must be as practical as possible, and that the teaching cannot be too fully illustrated by apparatus, experiments, and visits to places where the practical application of hygienic principles may be seen. The teaching need only deal with essentials, and a scheme including all the matters of personal and domestic hygiene that are essential to his pupils need not fill more than a dozen pages of foolscap. But the teacher must have the knowledge which will fit him for the discharge of other important duties. He should be trained to detect the symptoms of defects in mental development and of vision, of commencing bodily deformities, and of signs of ill-health; and he should possess a knowledge of the methods of physical training and of their rationale. The knowledge of a few elementary principles of psychology is also essential, and he should be capable of taking a few simple anthropometrical

measurements of the scholars, and of supervising the hygienic environment of the pupils while at school. Prof. Edgar maintained that to secure a satisfactory training of the teacher in school hygiene the student must receive such a course of instruction in the general principles of education as will enable him to realise the great importance of the physical and hygienic aspects of the subject. He must receive special instruction in hygiene and physiology to enable him to teach the elements of these subjects, and to conduct all his school work in the light of their principles. The student must be able to apply his knowledge to secure the improvement of the physical condition of his pupils. He must therefore have clinical instruction from an expert in a school large enough to give a considerable variety of types, or in several schools.

A resolution was adopted requesting the Council of the Sanitary Institute to represent to the Board of Education the fragmentary and incomplete character of the five syllabuses in school hygiene set out in the Board of Education regulations for the training of teachers, 1904; the great importance of emphasising officially the need for instruction in hygiene of teachers whose training is over; and in favour of the Board's recognition of a thorough and practical test of a teacher's knowledge and experience of the applications of health principles in school life.

TRAINING OF SCHOLARS IN HYGIENE.

The Bishop of Hereford presided when the training of scholars was the special subject. He thanked the Royal Sanitary Institute for calling the conference and the medical profession for the many indications of their desire to act publicly and in combination more than hitherto in the instruction of the public. He knew of nothing, he said, of more practical interest and benefit to all working for the health of the people through temperance than the declaration of nearly 15,000 doctors. As an old schoolmaster he said the thing that counted as of the first and highest importance after good sanitary arrangements is the personality of the teacher.

Prof. Findlay, in the address with which he opened the discussion, begged medical men to adopt a cautious attitude in dealing with the school curriculum. He said that, so far as the United States are concerned, there is no warrant for the belief that the millions of children mentioned in the recent petition of medical men to educational authorities are much the better for the superficial text-book recitations prescribed by state authorities. If hygiene be introduced into schools on sound lines it will contribute not to further over-pressure, but to some lightening of the mental load under which school children are suffering. Varied methods must be adopted in hygiene according to the development of the scholar, and it must be remembered that all real appreciation of science depends upon personal sense-experience. Hygienic habits will be formed by the children if they are trained to do hygienic acts, so that the field for hygienic exercise should be found in the life of the school. But in all matters relating to the direct conduct of the scholar's life the school must not disregard the standard of home life.

Subsequently, Miss W. Hoskyns-Abrahall described what information with respect to hygiene a child should be expected to have accumulated during his school course. Miss Beszant outlined suitable courses of work in hygiene for both elementary and secondary schools. Prof. A. Bostock Hill insisted upon the importance of teaching children from the earliest years of school life, by example as well as precept, the elements of healthy living. Miss Ravenhill and Miss Heap reported on the present position assigned to hygiene teaching in primary and secondary schools. Dr. Shelly urged the claims for compulsory instruction in elementary hygiene in secondary schools.

HISTORY AND CURRENT EVENTS.

AMONG the many experiments that are being made for the solution of our social evils in England, that of the Garden City Association is attracting much attention, and there is in process of formation a new town in the neighbourhood of Hitchin. Whether the experiment will be successful or not cannot be foretold with certainty, but as it is not connected definitely with any industrial firm, we take leave to have our doubts. Epaminondas founded Megalopolis in Arcadia, but history seems to be silent on its after history. Alexander the Great founded many Alexandrias, most famous of which, if not the only one with a history, was that which, built near the mouth of the Nile, became a great commercial centre, and a new Jerusalem to the Jews of the Dispersion. Was it not there that the Septuagint was made? Some scholars think the Book of Ecclesiastes was written by a native thereof. Alessandria, of North Italy, was founded not by the Greek monarch, but by a Pope Alexander, who wished for a capital for North Italian Guelfs in the early years of the 12th century. *That* has lasted. But New Tipperary, the work of Irish agitators, was a complete failure. All the history of towns shows there must be an economic reason for the situation—*e.g.*, Saltaire, near Bradford, and Dayton, Ohio, U.S.A.

"THE growth of industrialism must be accompanied by the growth of Government control. The duties of the Government increase in proportion to the increase of corporate power and activity. Wealth must not be so used as to harm the people. The corporations ought, in their own interest, to work in harmony with the Government." So says the President of the U.S.A. And his words are echoed by the Association of Manufacturers of St. Petersburg: "All points of the men's demands shall not be discussed, but shall be laid before the Minister of Finance, with a view to their treatment as soon as possible by legislation." The Prussian Government has also "announced its intention of introducing legislative measures designed to remedy the evils of which her miners now on strike complain." So, whether it is the "democracy" of America, or the "autocracies" of Russia and Prussia, the work of Government is to defend the weak against the strong. In the middle ages it was the peasant against the feudal lord, now it is the workman against the capitalist. The *form* of Government is unimportant, it is the objects of Government, the classes whose support maintains the Government, and whose interests are studied by the Government, that make the difference between States.

BUT if capital is strong as against labour, and if it requires all the strength of a State, broad-based upon the people's will, to keep the balance even between them, it is weak against States, and capitalists have recourse to their own Governments when, having lent money to foreign Governments, they cannot get interest on their money or the return of their principal. Creditors have always had some help from their State as against debtors, and quite recently we have two illustrations of great Powers undertaking to collect debts. They happen to be the "Anglo-Saxon" Governments. Great Britain has taken over the financial control of the Tonga Islands, with the unwilling consent of the King; and the U.S.A. has agreed with Santo Domingo "to adjust Dominican debts, to arrange methods of payment, and to adjudicate on unliquidated claims." The U.S.A. protests that this is not a protectorate, but the history of the classical example of this procedure makes us doubt as to the ultimate result. When, in 1876, Great Britain and France undertook to manage the finances of the Egyptian Khedive, no one quite foresaw the present position in the Nile Valley, either Lower or Upper.

HE would be a rash man who should think he knew the present condition of things in Russia, and to forecast events in that immense empire is impossible—even for a day. What seems to have happened recently is a number of strikes in different towns, which the Government has more or less suppressed, fearing that behind the economic question there were elements of political revolution. The peasants, though their representatives, the *Zemstvos*, have asked for changes, seem to have been quiescent. Supposing this to be true, might we not say that the Tsar's Government is based on the unvoiced will of the ignorant peasantry, and that he is therefore acting in the name of the vast majority of his subjects against the educated nobles and the half-educated town artisans? If so, may we make a parallel and a contrast with the French Revolution? After France had been governed by terror for three years because the mob of Paris had overawed the Convention and maintained the Committee of Public Safety, Napoleon's "whiff of grape-shot" showed what might have been done at first, if only the middle classes had had courage. In Russia the whiff came first, and thus it was not a revolution, but only a revolt.

ITEMS OF INTEREST.

GENERAL.

THE King's Speech at the opening of Parliament on February 14th announced that provisions for amending the laws relating to education in Scotland will be brought forward again this Session.

THE London County Council has approved the scholarship scheme of its education committee, but only after making important changes. The recommendation that the Junior County Scholarship should consist of free education up to the end of the school year in which the scholar attains the age of fourteen years, subject to renewal [in the case of exceptionally able scholars or scholars engaging to become teachers] for two more years, provided that in either case the scholar is satisfactory alike in conduct and attainments, has been completely changed. All words between "renewal" and "for" following it have been omitted, and the scholarship scheme is no longer open to the charge of being a "teacher-catching machine."

IN view of the vote on the Greek question to be taken at the University of Cambridge on March 4th, the Modern Language Association is circulating a pamphlet of Dr. Karl Breul, entitled, "Greek and its Humanistic Alternatives in the 'Little-Go.'" It is often said that teachers are in favour of retaining Greek. Certain well-known headmasters doubtless are averse from touching the studies which they have taught so long, but we understand that a majority of the Incorporated Association of Headmasters is in favour of Modern Language alternatives to Greek. Moreover, at a recent poll of the Incorporated Association of Assistant-masters the majority in favour of alternatives was as eight to one. Distinguished educationists and men of science often direct attention to the model set by German Universities. What is to be found in Germany, in France, in the whole world outside the British Isles? No compulsory Greek, or even Latin; and yet in Germany and France classical studies flourish more than in England. Dr. Breul makes it quite clear that modern-language teachers are not seeking an easier entrance to the older Universities than is possible at present. On the contrary, the French and German standard proposed will need, he thinks, far harder work than the preparation of the set Greek book does at present. Modern

languages are, he urges, no less efficient means of education than Greek and Latin. Dr. Breul's book may be commended to all graduates who have the right to vote on March 4th, and if the arguments which Dr. Breul advances are followed carefully their votes will be recorded in favour of elasticity and freedom.

IN response to an application from the London County Council, the Board of Education has consented to pay grants on courses of lectures on English literature in evening schools on the following conditions:—(1) That no claims for grants will be made on account of the attendances of any students who give less than fourteen attendances at the class instruction; in the case of such students, however, lecture attendances as well as class attendances may form the subject of a claim for grant. (2) That the attendances are to be registered in such a manner as to enable the attendances at the lectures and at the class instruction to be recorded separately. (3) That due attention is given by the students to home reading and study, concurrent with the lectures, and that systematic exercise work is done by them.

THE annual meeting of the London Branch of the German Language Association was held on February 4th. The chief aims of the association are to extend the knowledge of German literature and to aid in fostering amicable relations between Germany and this country. Dr. Alois Weiss, the president, in the course of his address, expressed the desire of the association to spread the teaching of German in the United Kingdom, more particularly in the schools. If, he said, the English people were better acquainted with the German language they would appreciate the German people more. During the last six years the association has done all that it can do to efface the effect of the misunderstandings that have arisen in consequence of the action of some of the less reputable journals of both countries. The commercial competition between the two countries need not be of an unfriendly nature. Twenty-one members have joined the association during the year, bringing the total up to 542. In conclusion, Dr. Weiss expressed a hope that the association's endeavours to spread an appreciation of the beauties of German literature, and to unite Englishmen and Germans in the study of the language of Goethe and Schiller, would strengthen the bond of union between the two countries.

THE distribution of the prizes and certificates awarded after the annual competition in the French literature and language, under the auspices of the National Society of Professors of French in England, took place on February 4th, at the Mansion House. M. Paul Cambon, the French Ambassador, presented the Society to the Lord Mayor, and in the course of his remarks said that "the Society of Professors of French established its competitions in French twenty years ago, and since then the competitions have developed annually and grown in importance. Their increasing success indicates that the relations between our two countries are becoming more intimate and better every day. In the front rank of those who have brought about this result may be named the great Corporation of the City of London and the Society of Professors of French. It is in the world of the City, it is in the world of business, that the most lively feelings, the most evident disposition for a drawing together of France and England, are found. Those boys and girls who know our language well, and who have familiarised themselves with our literature, must have acquired some affection for our country, for the best way of bringing people together is to make them know each other. Among our young French people an analogous phenomenon is to be observed; and if the young people of England visit France they will find among the youth of France very lively feelings of friendship for England. I am sure that these feelings will

develop, and that this excellent understanding which has established itself lately between the two countries will continue to develop."

THE prizes and certificates gained in French literature and language were distributed by the Lady Mayoress. The Sèvres vases given by the President of the French Republic were awarded to the Ladies' College, Cheltenham, and the Royal Military Academy, Woolwich. The gold medals given by the Minister of Public Instruction were gained by Miss L. C. Marx, of the Ladies' College, Cheltenham, and Mr. E. M. F. Momber, of Cheltenham College. The silver medals given by the *Alliance Française* were won by Miss M. L. G. Jeffreys, Godolphin School, Salisbury, and Miss M. Fowle, the Ladies' College, Guernsey. The silver gilt medal given by the *Alliance Française* was won by Mr. R. G. E. de Miremont, Harrow School. The silver medal given by the French Ambassador in London was awarded to Mr. T. Campbell, Royal Military Academy, Woolwich, and that given by M. Camille Barrère, French Ambassador in Rome, to Mr. T. A. S. Swinburne, Royal Military Academy, Woolwich. In the special competition the silver medals given by the *Alliance Française* went to Miss O. Sheldon, St. Mary's College, Paddington, and Mr. A. N. Pirouet, Oxenford House, St. Lawrence, Jersey. In the competition of the *Entente Cordiale for bourses de voyage* the winners were Miss M. M. Curtis and Mr. F. Flint.

IN May, 1904, the Council of the Association of Technical Institutions undertook an inquiry as to the conditions of admission to evening classes in technical institutions and evening continuation schools throughout the country. A letter and form of inquiry were issued to education authorities and technical institutions throughout the United Kingdom, and replies were received with reference to sixty evening continuation school areas and from eighty-three technical institutions. The questions of the form of inquiry asked for information as to the existence of the following conditions of admission to evening classes: (a) entirely free, (b) at less than normal fee, (c) by scholarships, (d) by arrangement with employers. The report of the inquiry has now been published by the association, and provides valuable evidence that educational facilities are most appreciated when some effort has had to be made to secure them. The general opinion of competent judges seems to be that advantages secured easily are valued very lightly.

THE returns and expert opinions recorded in the report issued by the Association of Technical Institutions have led the council of the association to the following conclusions.—(1) That it is undesirable to establish any general system of free admission to evening continuation schools, or of free admission or admission at specially reduced fees to evening classes in technical institutions. (2) That it is unnecessary to grant entirely free admission to evening classes in technical institutions, to any special class or body of students or workers engaged in skilled industries, such as apprentices or persons under twenty-one years of age. (3) That there is need for the establishment in all technical institutions of sufficient "free studentships" or "scholarships" to secure the admission of all qualified and deserving students who are unable, by reason of their limited means, to pay the usual class fees without more sacrifice than should reasonably be expected of them.

A SCHEME for school certificates and Army leaving-certificates has been adopted by the Local Examinations Syndicate of the University of Cambridge. School certificates of two grades will be awarded under certain conditions to candidates in the Cambridge Junior and Senior Local Examinations who have been educated in approved schools. A junior school certificate will

be awarded to any candidate who has attended one or more approved schools for at least two years continuously, and has passed the Junior Local Examination. A senior school certificate will necessitate attendance at one or more approved schools for at least three years and a pass in the Senior Local. A candidate who has obtained a junior or senior school certificate may have additional subjects endorsed on the certificate already gained, provided that the candidate while still at the approved school passes in such subjects at a subsequent examination of the same grade.

ARMY leaving-certificates will be granted to boys of not less than seventeen years of age who, under certain conditions, gain Senior Local certificates. The candidate must satisfy the examiners in English composition, history of England, geography, arithmetic, geometry and algebra, together with a special paper on practical measurements and in any two of the following: (i.) chemistry and physics, (ii.) French or German, (iii.) Latin or Greek. Full particulars can be obtained from Dr. Keynes, Syndicate Buildings, Cambridge.

A SERIES of lectures and discussions has been arranged by the Childhood Society and the British Child-Study Association. The meetings are held on Thursday evenings in the Parkes Museum, Margaret Street, London, W. The subjects selected for the present session appeal particularly to schoolmasters and schoolmistresses who take a broad view of their educational duties. Application for further particulars may be made to the honorary secretaries of the associations concerned.

THE Board of Education has published in the form of a Blue-book (cd. 2,366) the reports from the fourteen colleges which participated during the year ended March 31st, 1904, in the annual grant, amounting to £27,000, made by Parliament for "University Colleges in Great Britain," and from the three colleges in Wales which receive a grant of £4,000 each.

THE report of the Modern Languages Holiday Courses Committee of the Teachers' Guild for 1904 has now been published. The attendance at the 1904 courses was as follows: at Tours, 33 students; at Honfleur, 38; at Neuwied, 34; and at Santander, 3; total, 108, of whom 69 were ladies. This is a falling off of 7 as compared with 1903, and of 10 as compared with 1902. The committee fully realize that the causes which have led to the decrease are mainly two—viz. (a) the multiplication of similar courses, especially in the north of France; and (b) the sending of County Council students to French centres, where the courses are more or less under the control of the French education authorities. Courses, lasting from three to four weeks, will be held next August in the same four centres where they were held in 1904. The dates of commencement will, in all cases, be in the first week of August. The representatives of the English committee, who will attend with the students, will, it is hoped, be: at Tours, Mr. F. S. Marvin; at Honfleur, Mr. Sheldon R. Hart, Headmaster of the Grammar School, Handsworth; and at Neuwied, Mr. S. de Ste. Croix will represent the Guild. At Santander, it is expected that Don Fresnedo de la Calzada and Mr. Sidney Beirne will act as representatives.

THE Director of Education for Victoria, Mr. Frank Tate, recently visited New Zealand to acquaint himself with the system of education there. His report to the Victorian Minister of Education is published as a supplement to the *Education Gazette and Teachers' Aid* for September, 1904, published in Melbourne. Mr. Tate found that one leading difference between the educational systems of New Zealand and Victoria is in the provision made by New Zealand for higher primary and secondary education. In Victoria the State system controlled by the Education Department deals with primary education only, all the higher

work is left to private enterprise. As a result, many important centres of population have no establishment worthy of the name of a secondary school, and therefore higher education is possible only to the children of parents who can afford to send them to boarding schools.

THE thirty-ninth "Matriculation Directory," published by the University Correspondence College, supplies convincing evidence of the determination of the Principal to keep abreast of every modern requirement. The recent changes in the regulations for the examinations of the University of London, designed to bring the syllabuses into line with modern methods of instruction, have been noted duly by the tutors of the Correspondence College, and their arrangements have been modified suitably. Students proposing to work for a London degree may apply with confidence to the College for expert guidance in their studies, with every prospect, if they follow instructions, of finding their names among those of successful candidates.

WE have received a copy of the seventh annual report of the Committee of the Moral Instruction League. The report shows that the most important work undertaken by the League during the past year has been the circularising of members of education committees. Nearly 7,000 members of education committees in England and Wales had been circularised. The secretaries of 335 committees have been personally written to. To each secretary and member a circular letter and copies of "A Graduated Syllabus of Moral Instruction," a specimen lesson, and other literature have been sent. Lectures on moral instruction have been delivered during the year by members of the League at Aberdare, Middleton, Cardiff, Hampstead, East Ham, Forest Gate, Merthyr, and other places. Full particulars of the work of the League may be obtained on application to the Secretary, Mr. Harold Johnson, 19, Buckingham Street, Strand, W.C.

THE HON. MAUDE LAWRENCE has been appointed to the newly-established post of Chief Woman Inspector under the Board of Education.

MR. B. M. ALLEN, assistant-secretary to the late Technical Education Board, has been promoted to the position of Assistant Executive Officer to the Education Committee of the London County Council. Mr. E. M. Rich has been appointed Principal Assistant in the executive officer's department.

MR. T. S. DYMOND has been appointed to an inspectorship under the Board of Education, and to act as special adviser in matters of rural education, of nature-study in public elementary schools, of agricultural instruction in evening (including afternoon and Saturday) schools, and of the advancement of various forms of technical education in rural districts.

SCOTTISH.

MR. GRAHAM MURRAY, Secretary for Scotland, in opening a new school in Partick, took the opportunity of emphasising the importance of the teacher in any system of education. The real efficiency of education depended in greatest measure on the personality of the teacher. He was not one of those who wished to see the teacher placed in the position of master instead of servant, but subject to that he entirely avowed himself the teacher's sympathiser. It seemed to him that if they were to have education bettered they could only do it through the character and attainments of those who taught, and they could only get that character and those attainments if they made the profession sufficiently attractive to secure the best men. In regard to the teaching profession his ideal was that every member of it should be a graduate. He did not, of course,

imply that this could ever be practically attained throughout the length and breadth of the land, but the more they could utilise the universities in securing that those who were set to teach children were themselves persons of real culture the nearer they would attain to a school system which would give the best practical results.

AN important conference on secondary education was held recently in the Merchant Hall, Edinburgh. The conference was called to afford an opportunity of exchanging views on the subject of the present position and prospects of secondary education and of the province of educational endowments, which so largely contribute towards its support. Mr. John Harrison, Master of the Merchant Company, presided, and the conference was one of the best attended and most representative that has ever been held on this subject. The following resolutions were arrived at, and a committee was appointed to present them to the Secretary for Scotland, and to watch over the interests of endowed schools in the event of the introduction of an Education Bill: (1) That means should be taken for the development and improvement of the organisation of secondary education in order to extend its advantages to those who are to hold leading positions in commerce and industry. (2) That the endowed secondary schools are working under serious difficulties owing to the want of (a) correlation among bodies charged with the conduct of education; (b) a representative authority to settle questions in dispute between such bodies; (c) a national system of bursaries to enable children of promise to pass from the elementary to the secondary school, and from the latter to the universities and technical colleges. (3) That, in remodelling the national system for the training of teachers, the needs which secondary schools have for more highly trained teachers should be kept in view, and further, that, as far as possible, teachers, both elementary and secondary, should be drawn from those who have had a thorough secondary education.

CIRCULARS have been issued by the Scotch Education Department giving particulars of a scheme by which Scottish student teachers may be received in French lycées and French students in Scottish schools. This scheme has been in operation on a small scale during the past session, and the success that has attended it has encouraged the promoters to extend it still further. It is not intended that these student teachers should take the place of professional teachers, but that they should be employed to conduct small conversation groups of five or six pupils. Attendance at these lessons is to be quite voluntary and to be regarded as a privilege, and to some extent as a reward for good progress in the ordinary class work. It is proposed that maintenance salaries of £70-£100 shall be attached to these posts. Managers of secondary or higher-grade schools who wish to avail themselves of the services of French-speaking assistants in the manner indicated are requested to write to the Assistant-Secretary, Scottish Education Department, Edinburgh.

IT has frequently been urged against all schemes of bursaries that they tend to become the recruiting grounds for the learned professions, while no inducements are offered or provided to enable poor but capable lads to join the ranks of industry and commerce. In connection with the poorer districts in the Highlands, the Scottish Secretary, on the suggestion of the Congested Districts Board, has arranged to offer facilities for proper training in crafts to boys and girls in humble circumstances. The outcome of this experiment, the first of its kind on a large scale, will be followed with keen interest. The scheme sets up courses of training in three directions: (1) The training of girls in domestic economy, so that they may be fitted to earn higher wages and to fill superior situations. The selected candidates will be trained under the

Aberdeen Educational Trust in an institution specially set apart for this purpose. (2) Manual training of boys by means of apprenticeship to trade. Arrangements have been made with large employers of labour in different parts of the country to reserve yearly a certain number of places for boys from fourteen to sixteen years of age belonging to the congested districts. The Congested Districts Board are prepared to supplement the wages received to such an extent as will allow these boys to be maintained at their trade till their apprenticeship is complete. (3) The training of boys in practical seamanship. It was at first hoped that a training ship might be stationed at some central port in the Highlands, but this having been found impracticable, it has been arranged to reserve places for boys who wish to follow the sea in the institution at Liscard, under the direction of the Navy League. The chosen candidates will be maintained there until they are fully qualified to take posts in the merchant navy.

MR. GRAHAM MURRAY, Secretary for Scotland, has resigned office, consequent on his appointment as Lord President of the Court of Session. Of his record of service in his high position, it is enough to say that he maintained the great traditions established by his predecessor, Lord Balfour. As Minister of Education for Scotland, his term was made memorable by the introduction of an Education Bill that approved itself to every shade of political and educational opinion, and well deserved if it did not command success. The recent Minute setting up committees for the training of teachers on a national basis and in close connection with university life was his last and probably his greatest service in this field, and will ever keep his name associated with one of the reforms in the history of education. The teaching profession, like all other sections of the community, have heard of his resignation with sincere regret, but in their case there is a note of personal feeling that is seldom present at the resignation of any great public official. Mr. Graham Murray has shown in his public utterances and by his official acts that he was fully sensible of the great place occupied by the teacher in every educational system. Recognition and appreciation from such a quarter have been sufficiently rare to make Mr. Graham Murray's demission of office the occasion for an unexampled tribute of personal regard on the part of members of the teaching profession. The Marquis of Linlithgow, the first Governor-General of Australia, has been appointed his successor.

IRISH.

THE examinations of the Intermediate Education Board will begin this year on June 13th, and continue on successive weekdays till the 26th, with the exception of the 22nd. There is a slight difference this year in the order of examinations, due, no doubt, to the fact that the 13th is the day after Whit Monday, so that for it are fixed Spanish and Italian, subjects which are taken by extremely few candidates.

A DEPUTATION from the Association of Intermediate and University teachers waited early this year upon the Assistant-Commissioners of Intermediate Education, and laid before them a statement of the grievances of assistant-teachers in intermediate schools. These consist of exceedingly low salaries, insecure tenure, and the absence of any means of securing to the assistants any share of Intermediate grants, and could be remedied by the introduction of a system of registration accompanied by a gradation of salaries that would create a true teaching profession.

ALTHOUGH it savours somewhat of putting the cart before the horse to give courses of lectures for the training of secondary-school teachers when one considers the present position of such

teachers, and the absence of all inducements for men to take up teaching as a career, it is certainly noteworthy and deserving of all praise that such courses are now becoming almost common. Last term Mr. Culverwell gave a series in Trinity College, and this term the Rev. T. Finlay, S.J., one of the Intermediate Commissioners, and Prof. Magennis, are giving another in the University College in Stephen's Green. This latter is in connection with the Royal University Diploma.

THE Department of Technical Instruction has struck out another new line by appointing as its senior Inspector Mr. Louis Rouillion, Professor of Manual Training in the Teachers' College of Columbia University, New York. Mr. Rouillion has also been director of the Mechanics' Institute, one of the largest evening technical schools of New York, has filled the position of electrical engineer with the General Electrical Company, and has been during the past year President of the Manual Training Association of the Eastern States. His appointment is in the first instance for five years, during which time he will have abundant opportunity to hustle us into the ways of the New World.

THE Report of the National Board for 1903, which has been kept back since last August, has made its belated appearance. It is clear that the expiring Government has given up the thorny subject of reforming Irish education. At the end of 1903 the number of schools under the Board was 8,720. Of the teachers fifty-seven per cent. were trained. The attendance was not good, being only sixty-five per cent. as contrasted with eighty-five per cent. in Scotland. The report enters into a consideration of the poorness of the school buildings, and tells us that, in the case of a very large number of schools, heating, lighting and cleansing are almost entirely neglected. To remedy some of these evils the Board urged the Government to render available part of the Development Grant, but this was refused, while the Chief Secretary stated in the House of Commons that more money could not be spent economically on Irish National Education. Truly a cryptic utterance!

BUT the Educational Reform Association in Belfast steps in where the Government fears to tread. It has drafted a Bill to be brought before Parliament to remedy the unsatisfactory state of education in Ireland. Its object is to place secular education under the control of a secular board, and to co-ordinate all grades of education, while safeguarding the rights of parents to religious instruction for their children. Meanwhile one may ask, where is the report of the special commission appointed last spring by the Government to inquire into Secondary Education in Ireland?

SIR JOHN NUTTING'S letter containing his offer to Trinity College to establish entrance exhibitions has been published in the daily press. It is to establish for five years ten annual entrance exhibitions each of the value of £50 per annum for two years, to be awarded without further examination at the discretion of the Board of Trinity College to ten young men or women who have competed with success at the senior or middle grade examinations of the Intermediate Board. They are to be confined to Irish secondary schools which have no endowment. Its object is of course to attract Roman Catholics.

THIS offer has been accepted by Trinity College, but has met with two very damaging attacks. The first was by Mr. Richard O'Shaughnessy, an old Trinity graduate, who pointed out that it misses the whole of the Roman Catholic difficulty, which requires that two reforms be made by the Board of Trinity: (1) the chair or chairs of mental and moral sciences must be duplicated; (2) the governing body must cease to be entirely Protestant. Until the Board makes proposals on these points

it is useless to discuss whether Trinity College can be made satisfactory to Roman Catholics. The other attack came from the Roman Catholic hierarchy, who passed a resolution which has been read in all churches throughout the country, and of which the following is the first paragraph: "That in view of the insidious attempts now being made by the authorities of Trinity College and some of its Protestant supporters to induce by pecuniary bribes the youth of our Catholic schools to enter that institution so often condemned by their pastors, we feel it our urgent duty to warn our flocks against the danger of accepting those educational bribes."

As conferences are the latest approved panacea for political difficulties, it was certain that one would sooner or later be proposed for the University question. It has now been suggested at a meeting of the Catholic Graduates' and Undergraduates' Association in an address by Mr. Stephen Gwynn, the object being to reorganise the one real University—Trinity College—which exists in Ireland, and to make of it a National University. But concessions are needed on both sides.

At the conferring of degrees, held at the end of last term at Trinity College, there were as many as forty ladies who graduated, having satisfied the requirements by completing their course of studies at Oxford or Cambridge.

WELSH.

THE Breconshire Pupil Teachers' Scheme has been drawn up. It requires that all candidates and pupil-teachers shall be trained in the Intermediate schools of the county, also, if practicable, in certain schools of the adjacent county of Glamorgan. Exhibitions shall be given to cover fees for two years; 15s. per annum for books, and the whole of the train fares when necessary; or, if candidates have to live away from home, 3s. 6d. per week towards lodgings and week-end train-fare. Twenty such exhibitions shall be given yearly to pupils who shall be chosen by examination. These exhibitions may not be held along with a bursary. The money paid is to be returnable if the pupil does not go forward to teaching. Such exhibitioners are to prepare for the Matriculation examination of the University of Wales. At sixteen years of age, the pupil-teachers are for the next two years to spend four months, from September to December, in uninterrupted training in the art of teaching, and to receive continuous instruction, from January to June, in the Intermediate schools of the county; or, in certain cases, a pupil-teacher may set apart a portion of each day for attendance for instruction at a pupil-teacher centre, and the other part for training in an elementary school. For these two years further exhibitions will be awarded.

IN Cardiganshire the Education Committee have recommended a first vote not to exceed threepence in the pound. It was stated that in the whole of the schools there were about 6,000 children, and that the cost of the clerical work had risen from £800 to £1,000. On the other hand, it was asserted that the amount paid by the old school-boards for clerks was double the present expenditure.

THE managers of the St. Helen's Roman Catholic School, Barry, have sent a representation to the Board of Education complaining of the treatment of their school by the local education authority. They complain that the staff which the authority is willing to provide for the school is below the standard of staff in the council schools in the area, and is insufficient. They assert that the cost per head of scholars, with regard to salaries of teachers, is proposed to be for the mixed school £1 15s. 8d., whereas in a similar council school the cost is £4 9s. 1d. In the infants' school the cost per head of scholars, with regard to salaries of teachers, is £2 2s. 4d.;

in a similar council school it is £6 12s. 6d. There are similar further complaints on other points of school efficiency.

CARMARTHENSHIRE Education Committee have enquired from the schools whether temperance can be dealt with as a school subject. At the last meeting of the committee the clerk reported that the managers of the Llanelly Schools would see that "object-lessons were given," together with occasional essays. From all the other schools there were replies to the effect that the time-tables were too full. In Carmarthenshire it has been questioned whether money has been levied or used out of the rates for the purpose of maintaining voluntary schools. The clerk definitely stated that the treasurer assured him that the amount of grant earned up to the present time more than paid the expenditure on the voluntary schools in the county.

THE Secretary to the Flintshire Education Committee, Mr. Llewelyn Jones, has recently urged that more should be done, especially for the rural districts, to promote the continuation of the education of boys and girls on leaving school. In most towns there are public libraries. The large capital expenditure, particularly on buildings, makes it difficult to provide public libraries in villages. It would not however, he suggested, be difficult to establish a well-equipped library in every elementary school in the county, and books might be lent not only to the pupils but to all readers in the district. No one would complain if the head teacher was to be made the parish librarian. It would involve no loss of dignity, and it might to a certain extent make him the director of the reading of his scholars after they had left school. "No one would complain," says Mr. Jones. Probably, it would be as well, first, to ask the head teachers themselves on this point.

A CONFERENCE has been held at Ruthin of the authorities and teachers with regard to the scholarships offered by Intermediate schools to pupils from the elementary schools. It was stated that during the last six years, in connection with one school, sixty-five scholarships had been offered to pupils in the elementary schools, of the aggregate value of £402. For these sixty-one candidates came forward, of which number nineteen only were successful in gaining scholarships of the value of £114. Every year the examiners reported that the work was of an unsatisfactory character. The organiser of education in the county said the standard of the examination was far too high, and ought to dovetail exactly into fifth-standard work.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Features of French Life. By Frank R. Robert. (Dent.) Two parts. 10d. each net.—All teachers of French who know anything of French life—it is a pity we cannot omit the qualifying phrase—will welcome these two small additions to Dent's Modern Language Series, which is so capably edited by Prof. Rippmann. Mr. Robert has done his work very creditably. Each book contains fifteen chapters, each dealing with a facet of French life. For instance, in the first book we have chapters on France, a railway journey, the first day at school, the *Fête nationale*; and in the second on French money, postage stamps, French windows, the Gingerbread Fair, public schoolboys, New Year's Day and French newspapers. All this is in French, naturally, and each chapter is followed by a *questionnaire* and notes on grammar and word-formation. There are interesting illustrations by the author and Mr. J. A. Symington, and a sufficient index. The reading of such a book might well replace the

more literary reader on one day of the week. The energetic teacher would bring to class several other illustrations of the particular point of French life to be discussed. It is astonishing what a far different vocabulary is acquired in these colloquial lessons from the more literary one. Both these are necessary, and they supplement one another. If we had to offer one criticism, it is that the chapter on public-school boys is too short. Regulations may differ in different schools, but we hardly think that boys are allowed out only on *one* Sunday in the month in any French *lycée*. A complementary chapter on girls' schools might be added in a second edition.

Blackie's Little French Classics: (1) *Michelet, Jeanne d'Arc*. Edited by A. J. Perman. 48 pp. (2) *Guizot, La Révolution en Angleterre*. Edited by W. G. Hartog. 31 pp. (3) *Florian, Select Fables*. Edited by M. D. M. Goldschild. 32 pp. (Blackie.) 4d. each.—This highly popular series is still growing, and a good standard is maintained in the editorial work. (1) Makes a very good reader, and is fully annotated; in (2) the notes are rather too grammatical, and more attention might have been given to history; (3) will be useful to supplement the prose reading-book in an intermediate form.

Preliminary French. By W. B. Snow and C. P. Lebon. viii. + 152 pp. (Harrap.) 1s. 6d.—This is an interesting little book, and represents a compromise between the older and newer methods, with a distinct leaning to the latter. A sensible preface gives useful hints. The text consists of dialogues descriptive of work at school, &c., short stories and fairy tales. The exercises consist of questions to be answered in French, English sentences to be translated, and suggestions for oral work in grammar. The French-English vocabulary is not quite complete; it contains about 1,500 words, which seems rather a large allowance in a beginners' book.

A First Book of French Oral Teaching. By C. V. Calvert and W. G. Hartog. xvi. + 236 pp. (Livingtons.) 2s.—There is evidence of skill and experience shown in the preparation of this book, and the principles enunciated in the preface are sound on the whole, without throwing any new light on the problems of modern-language teaching. The text itself is good, and a reform teacher will be able to glean useful hints from a perusal of this book. In some respects it might be improved. It may well be doubted whether "ample provision is made for exercises," as is stated in the preface. The mere answering of the *questionnaires* is insufficient. There should be more varied exercises bearing on various points of grammar. A few such exercises seem to have been added as an afterthought at the end of the book; they should appear as part of each lesson. The number of words to be acquired strikes us as very large; the French-English vocabulary contains nearly 1,900. Finally, we must protest against the pictures; if they are meant to represent ordinary French people, they are singularly uncomplimentary. There is, for instance, a touch of imbecility in almost every face on page 39, and the general effect of the pictures is poor, owing to the weakness of the pen-and-ink work.

A Handbook of French Dictation. By D. A. Wynne Wilson. 123 pp. (Blackie.) 2s.—The most valuable part of the book is the series of short passages for dictation; it might be well to issue this separately. Some of Mr. Wilson's introductory remarks are doubtless helpful; but the majority might be spared. Thus it seems of little use to say to a pupil, "Distingue-tu *quelle* and *qu'elle*." The notes on pronunciation are by no means satisfactory; for instance, what is conveyed by the statement, "Before *n, g* has a distinctive sound, as in *agneau*?" No distinction is made between the two sounds of *eu*, or the two sounds of *a*, in which case only differences of quantity are mentioned.

Classics.

The Tragedies of Seneca rendered into English Verse. By Dr. Ella Isabel Harris. ix. + 466 pp. (Frowde.) 6s. net.—The tragedies of Seneca are of first-rate importance in the history of the English drama, and no serious student of Shakespeare can afford to neglect them. It is to be feared that what Miss Harris says of her countrymen is true, or may soon be true, of our own: "the student of the English drama . . . seldom has such command of Latin as will enable him fully to study Seneca in the original." If so, this translation, or some translation, is a necessity. It is, perhaps, a pity that the well-known Elizabethan version of the ten plays was not reprinted instead. A copy now lies before us, dated 1581: the translators were Jasper Heywood, Alexander Nevile, John Studley, J. Nuce, and Thomas Newton. Everybody knew Latin at that time, of course; but this particular version was read by the contemporaries of Shakespeare, and should certainly be reprinted, since the book is very rare now. But we are glad, whether or no, to welcome Miss Harris's version. We gladly acknowledge the simplicity and correctness of the language, which is in pleasing contrast to most American compositions. The style is monotonous, it is true, all the more so because the choruses are translated by blank verse with the dialogue; but Miss Harris's aim is to assist the student of literary history, and for this end her work is satisfactory.

An Abridged History of Greek Literature. By Alfred Croise and Maurice Croiset. Authorised translation by G. F. Hefflebower. xi + 569 pp. (The Macmillan Company.) 10s. 6d. net.—We have little but praise for this excellent book. Mr. Alfred Croiset has already won a name by his larger *Histoire de la littérature grecque*, and the best preparation for a small book is to write a big one. The lucidity and good taste so characteristic of French scholarship has enabled the authors to avoid the pitfall of the compendium—too many facts. This "History" is in fact really interesting to read; and we have more than once in perusing its pages forgotten that we were contemplating a review. One of its merits is the good sense of proportion shown by the authors. When the subject needs it they are not afraid to speak at length; but they do not dwell on unimportant points, and they have also the courage to omit. An example of judicious treatment is the account of the Cyclic epic. We have never seen the subject more satisfactorily dealt with in so small a space. There are, of course, not a few matters where other scholars may disagree with MM. Croiset. Thus Anacreon seems to be confused with the poets of the Anacreontea on page 120; the real Anacreon, as Mr. Smyth has shown, was a fighting man who sang sometimes of love, a man of sterner stuff than the traditionary hedonist. Then, again, the German view, that the Greek theatre originally had no stage, is contradicted by tradition, and by all the positive evidence we possess. But these are minor faults, which are far outweighed by the merits of the book. The translation is generally good, but sometimes shows traces of foreign idiom (the contrast of *just now* and *at present* is unintelligible, on p. 68), sometimes of transatlantic solecisms (*wish me*, on p. 234, is an instance), and it is often ponderous. We predict a large sale for this book, and recommend it heartily to our readers.

Favourite Greek Myths. By Lilian Stoughton Hyde. xiv. + 233 pp. (Harrap.) 1s. 6d.—This is an admirable selection of the undying myths of Greece. It begins with a short introductory note; Prometheus and Pandora are followed by the Deluge, tales of Apollo, "Mercury" (*sic*), and other gods; Echo and Narcissus, Perseus and Jason, Procne and Philomela, Bellerophon, Tithonus, Comatus, Midas, Adonis,

the King and the Oak, Hercules, Theseus, Philemon and Baucis, Orpheus and Eurydice, Ganymede, Circe, Orion, and Psyche. We have not mentioned all, but have chosen those especially which are not usually found in these books. The tales are short, hence there is room to cover a wide range. The style is simple and good; and the one fault is that Latin names are used for the Greek—as Mercury, Ceres, Proserpina, and so forth. This book deserves a large sale, and is a welcome proof that school work is becoming more interesting to young children. A word of praise must be given to the pictures, which are reproductions of famous paintings by Titian, Turner, Millais, Watts, and others. Print and paper are excellent.

Ancient History. By Philip van Ness Myers. Revised edition. xvi. + 639 pp. With 12 plates, 21 coloured maps, 14 sketch maps, and 184 illustrations. (Ginn.) 7s. 6d.—It is convenient to have ancient history in one volume; and Mr. Myers's work commands approval, as is shown by the fact that this is practically the third edition. In this the oriental part has been re-written; and the sections on Greece and Rome are based on two histories by the same author. Within so narrow limits nothing can be expected beyond an outline; but the advantage is that the histories can be correlated. Of course it would be inadvisable to place this book in the hands of those who know nothing of history. The student should first have studied the more important of ancient histories in greater detail before he comes to this; then he will be able to profit. The book begins by a sketch of prehistoric times, followed by the races of men at the dawn of history; then follows the East, Greece, Rome, and the Romano-German or Transition Age. The East includes Egypt, Babylonia, Assyria, Chaldea, the Hebrews, the Phœnicians, the Persians, India and China; and this section occupies about 107 pages, one-sixth of the work. Greece fills 243 pages, Rome 221, and the rest 135. The whole is presented in a clear, comprehensive view, and we should be at a loss where to find a similar manual. Its chief drawback is its weight, due to the nasty paper, loaded with chalk, which the Americans use. The illustrations are good and intelligently chosen. Plato, however, is represented as usual by the soft "Asiatic Dionysus," and Scipio Africanus by a head which we do not know, and which has no source indicated (p. 428); probably imaginary. Each chapter has a bibliographical note appended as a guide for further study.

Ovid, Fasti V., VI. Edited by J. Thompson and A. F. Watt. 115 pp. (Clive.) 2s. 6d.—A useful aid for learners who work by themselves for the London examinations. It has the same business-like character as the rest of the series, and is open to the same criticism, from a schoolboy's point of view, that it gives help which he ought to do without. We have noted one or two inaccuracies. "Position" does not make a vowel long, but a syllable (p. 15); Dicte is not at the *extreme* east of Crete (68). "Such noms. as milēs" (p. 15) do not help the learner, who ought to be told that the stem vowel is short, as is shown in the oblique cases.

Virgil's Æneid. Book II. Edited by R. J. Hughes. With vocabulary. xxiv. + 69 pp. (Dent.) Mr. Hughes disclaims originality for this little book: but with too great modesty. The preface is distinctly original, for its pages seem to have been mixed up in the MS., with the result that a criticism of the *Æneid* is tacked on to Virgil's epitaph (p. xii.), and a paragraph which begins by a prolix account of the hexameter goes on without a break to Dido's feast and a summary of the subject matter (xviii.). The notes consist almost wholly of the translation of words and phrases. Thus: *et jam moreover, male fida* unreliable [*sic*], *in conspectu* in sight [of Troy], *visu* at the sight (of us), *mecum* and I. What use can these be

to any boy? Difficulties of syntax are left alone, and there are mistakes: *intenti* is not used adverbially (1), the Myrmidons were not so named from their industry (7), *demens* means "mad" not "fool" (94), *sed emin* means more than "and" (164); if *ilicet* is *ire-licet* (424) some reasonable principle should be stated to account for the change.

English.

Milton's Paradise Lost. Book VI. By H. B. Cotterill. xxxvi. + 70 pp. (Macmillan.) 1s.—This is excellent. Mr. Cotterill has steered clear of the practice so much in vogue of over-editing a single book of a great classic, so as to glut a student whose eyes are fixed on examination results with the kind of annotation to which we recently took exception in the case of another classic. The introduction is admirably managed, and Dr. Johnson and Macaulay are played off one against another ingeniously, and with an occasional rapier thrust from Matthew Arnold the thing is very pretty to watch. But Mr. Cotterill is under no delusions about Macaulay, for he speaks of his "rather hysterical essay"—which surely is *le mot juste!* The notes are well done and naturally rather elaborate, and a valuable chronological table in parallel columns is a useful feature; but the remarks on Milton's verse are more than valuable, only they are not developed, probably on account of the necessary limitations of the volume.

Selected Poems of Elizabeth Barrett Browning. By Elizabeth Lee. xxix. + 173 pp. (Ginn.) 1s. 6d.—There may be an element of originality in Miss Lee's avowed practice of constantly following up the study of Tennyson in class-work with the study of Mrs. Browning; but, ably as this edition has been managed, we confess we are not enamoured of her idea. Mrs. Browning was a bright particular star in her own literary firmament, but the world is still waiting, as Charles Nodier observes, "for the book written by a woman." Concerning this volume, its introductory sections deserve praise, although Miss Lee's estimate of Mrs. Browning as, with Sappho, constituting the only two immortal women poets seems curiously extravagant. The poems themselves are exceedingly well selected, and the inclusion of half a dozen of the Portuguese Sonnets is judicious and interesting. The notes deserve great praise. The reproduction of Talfound's chalk drawing of Mrs. Browning might conceivably be improved upon.

Select Poems of Emerson. By F. G. Phillips. 36 pp. (Blackie.) 2d.—Quite an original idea, and worthy of more extended treatment than it gets in this little booklet; for Emerson, the essayist, is passably well known, but his poetry represents a phase of his genius which is appreciated by few. Mr. Phillips's "Note" on Emerson, short as it is, reveals the enthusiastic student. Eleven well-selected poems are included in this collection.

A Book of Ballads. By C. L. Thomson. 204 pp. (Horace Marshall.) 1s. 6d.—This book has been compiled with the object of meeting the suggestion of the Board of Education that the first year's instruction in a four years' course of English literature should be taken up by a study of British ballads. Scores of anthologies already lie to hand in this line, but this is a handy and admirably selected one. We would recommend it for all these reasons, and also because it divides the subject into ancient and modern ballad poetry, and while giving all that is essential in the former, it includes many of the latter kind in an easily accessible way. A glossary has been added to explain the unusual and archaic words common in the Scottish ballads here included; but we do not quite approve of the suggestion that the dialogue form of some of them lends them a dramatic character which will enable them to be taken as miniature

dramas by the different members of a class. To our thinking, this destroys the essence of ballad poetry without securing any additional advantage.

Selected Poetry of Byron. By J. Wight Duff. lxx. + 388 pp. (Blackwood.) 3s. 6d.—It is a pleasure to go with the editor of this selection through what is undoubtedly some of the finest of Byron's work. It has been compiled from the complete shorter poems, and includes considerable selections from nearly all the longer poems, and from all Byron's dramas save one. A feature of great interest also is the inclusion of the best of Byron's translations side by side with their originals. The introduction deserves high praise as a scholarly piece of work. The notes are excellent, and are said by the editor to have been systematically made concise. It may be allowed that this is so, but they are careful, numerous, and exact. There is also an admirable bibliography which ought to do much to direct the attention of students to the Byron literature at present existing.

Lamb's Essays. vii. + 128 pp. *Tales from the Decameron.* 119 pp. *Macaulay's First Chapter.* 136 pp. (Blackie.) 8d. each net.—In these little books Dr. Rouse continues to provide a series of praiseworthy texts, and, with only the briefest introductions, makes pleasant and useful little volumes, somewhat off the usual lines. Boccaccio, for instance, is not generally supposed to be an author for school days. Yet the selection of tales has been remarkably well done; and the idea of taking the main matter constituting the first chapter of Macaulay's celebrated history, deleting footnotes and a few paragraphs containing digressions and enlargements which do not affect the argument, is distinctly a happy conception well carried out. Sixteen of Lamb's essays are included in the first-mentioned book.

Samson Atonistes. By A. J. Grieve, xiv. + 90 pp. (Dent.) *The Princess.* By A. J. Grieve, xix. + 147 pp. (Dent.)—These are two additions to the Temple Series of English Texts issued from Aldine House for educational purposes. In both cases Mr. Grieve has reduced his introductory matter to all but the minimum, yet he contrives to present a view both of Milton and of Tennyson which is adequate to the occasion. In Milton's work Prof. Masson's text is used, and Mr. Robert Bridges, Prof. Trent and Mr. Watts Dunton are all laid under contribution in a discussion of Miltonic metres, which is the only inadequate thing in the volume. But how should it be otherwise. In discussing Tennyson the editor falls foul of Mr. Andrew Lang's celebrated assertion that the "woman's rights" question was not "in the air" in 1847, and he quotes a very interesting list of works dating from John Knox (and, indeed, mentioning Plato) to show that plenty of opinions had been vented upon it long before Tennyson's time. The notes are good in both cases.

Prose Quotations. By Anna L. Ward. v. + 701 pp. (Dean.) 2s. 6d. net.—This book is a brilliant example of how to "make" a book. A compilation of quotations is necessarily a mechanical matter, although high qualities of criticism and taste may go to its editing; and among books of quotations this collection ought to be viewed favourably on all accounts. The amount of work expended on it may be judged from the statistics given in the preface. "Five hundred and fifty-three authors are represented. The sayings are grouped under eight hundred and forty-one heads, and there are twelve hundred and thirty-eight cross references." Patient effort, apparently, could no further go; yet even this is not the end. The indexes are marvellous. They include a topical index, a chronological table of most minute accuracy, a list of translators and editors, and a voluminous analytical index. The editor has done her work with profound seriousness, and deserves to be recognised widely for her ability.

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George MacDonald's Fairy Tales, Vol. II. (The Giant's Heart and The Golden Key). By Greville MacDonald, 87-169 pp. (Fifield.) 6d. net.—Since this edition is planned in at least five parts, the pages run on from booklet to booklet, an arrangement which has something to commend it if the whole series is to be bound in one, but hardly on any other grounds. Otherwise this re-publication is a happy idea happily executed, and the style, printing, and illustrations will commend these fairy stories no less than their own intrinsic excellences.

Etymological and Pronouncing Dictionary of the English Language. By the Rev. James Stormonth. The pronunciation carefully revised by the Rev. P. H. Help. New edition edited by William Bayne. viii. + 1,082 pp. (Blackwood.) 5s. net.—We have long been familiar with Stormonth's dictionary, and after constant use for many years are able to pronounce it trustworthy and helpful. In its new form, which contains nearly three hundred pages more than the eighth edition, we have little doubt it will increase its sphere of usefulness greatly. The handy size of the volume makes it suitable for use in the higher forms of schools.

History.

Macaulay's England in 1685. Edited by H. C. Notcutt. xxvi. + 211 pp. (Blackie.) 2s.—This is the third chapter of Macaulay's "History of England" supplied with a certain amount of elucidatory information by way of notes. An introduction contains a short life of Macaulay, something about his work on the History and a synopsis of the chapter. There are two appendices, one on "Macaulay at the Cape" (the book dates from the South African Colony), and an index. The work of annotation is well done, but, as the author says in his preface, the question of quantity is always a difficult one. In this case there are fifty pages of notes to 150 of text.

Colonies and Colonial Federation. By E. J. Payne. xvii. + 265 pp. (Macmillan.) 3s. 6d.—Four maps and a statistical table taken from the *Statesman's Year Book* are the clearest parts of this book. The rest suffers from a discursiveness which seems to arise from the attempt to treat a great subject in a breath, as it were. There are four chapters, called respectively geographical, historical, economic, and political. But they run one into another; the geographical is largely historical, the historical is partly economic, the economic is necessarily geographical, and the political is partly historical. Though there is a table of contents, the chapters have no sub-headings, and consist largely of long paragraphs. But those who thoroughly believe in the British Empire, in its perfect innocence and its absolute unselfishness, will learn here how it has grown only because of the wanton attacks of its enemies and to spread civilisation and blessing among less fortunate races. But they will surely need to tabulate the information in this stream of talk, a task in which the fair index will perhaps be of help.

A Short History of Citizenship. By H. O. Newland. xii. + 89 pp. (Elliot Stock.)—This is a curious book. The author regards himself as a pioneer in the task of setting forth the history of "citizenship." What he means by this term we have been unable to discover. Sometimes he seems to connect it with the life of "cities," and remarks in turn on "human society without cities," "cities without citizenship," and "the beginnings of citizenship in Greece." Then, after a chapter on "the universal citizenship of Rome," he speaks of Italian and German mediæval cities. In his last three chapters he confines himself to English history, with, however, some glances at the U.S.A., and discusses the history of the English parliamentary suffrage, especially in the nineteenth century. The reader will find some interesting information on primitive society in Australia

and Western Asia, on the empires of Egypt and Babylon, and suggestive comments on Greek and Roman history. But he will leave off with a sense of incompleteness and bewilderment. Perhaps the explanation is that this is only the historical portion of the lectures which the author recently gave in London. Perhaps not.

The Story of the British Empire for Children. By F. M. Anderson. xiv. + 167 pp. (Methuen.) 2s.—Written by an enthusiastic admirer of the British Empire to instruct and amuse his own little boy, and expanded for the benefit of the "children of the Empire," this little book has appealed strongly to us. It is illustrated with several photographs, written in short sentences, most of which form a paragraph each, and, while praising the Empire, has some thought-inducing sentences scattered here and there. We cannot refrain from quoting one of these (p. 123): "It has been wisely said that, when an Englishman and a Chinaman meet for the first time, he who smiles first at the appearance of the other is the barbarian. You may apply that maxim to more things than dress."

Geography.

A Smaller Commercial Geography. By George G. Chisholm. xii. + 239 pp. (Longmans.) 3s. 6d.—This is a new and revised edition of an already well known school-book. The section on the British Isles especially has been extended. The populations of towns are in this edition printed at the foot of the page in which the towns are mentioned, instead of being added parenthetically after the name of the town. There are no maps and no illustrations. The book is attractively printed.

Excursions and Lessons in Home Geography. By Dr. Charles A. McMurry. ix. + 152 pp. (The Macmillan Company.) 2s. 6d.—The geography of this book is not geography as we understand it in this country. Mr. McMurry's lessons are something between what is known as "general knowledge" and the old-fashioned style of object-lesson which used to be common in our elementary schools. There is so much valuable work which can be done out of doors in connection with the geography lesson, and so little time in which to do it, that we should begrudge the half-holidays devoted to visits to observe house building or to watch a blacksmith at work, to name two of the excursions given in the book. Besides, English boys are equal to visits on their own account of the kind outlined by Mr. McMurry.

Science and Technology.

Notes for Manual Instructors. Issued by the Department of Agriculture and Technical Instruction for Ireland.—This pamphlet is to be heartily commended. It is a clear and concise statement of the educational aims and value of manual instruction, pointing out the difficulties to be found in starting and carrying on the work, and giving advice to the teacher which should enable him to avoid the many pitfalls which beset him. At the outset mention is made of the special need for the instructor to be able to combine the tact and method of the teacher with the skill of the workman, and of the possibilities of co-ordination of the practical work with the other work of the school. The manual instructor himself is also recommended to specialise in some particular branch of science or art. Properly prepared schemes of work giving a bird's eye view of the aims of the teacher are strongly advocated. Following this introduction is valuable advice upon what is admittedly the most difficult part of the work, namely, the conducting of evening classes and itinerant courses, where so many different types of student present themselves. The special difficulties are enumerated and classified, comparisons are made, and advice given, which, if acted upon, will undoubtedly lead to success.

The value of drawing in manual training is clearly set forth, hints are given as to the limitations and the general character of the drawing, with mention in detail of the different methods of projection, sketching, dimensioning, &c. An outline of suitable theory lessons on tools and the materials used, with hints on teaching, is also given. Although the pamphlet will naturally appeal most to those engaged in the work of manual training, it ought to be studied by all who have the interests of true education at heart. In the meantime it is to be welcomed as an authoritative recognition of the value of the subject.

The Beginner's Guide to Carpentry. By Henry Jarvis. 128 pp. (Percival Marshall.) 1s. net.—This book is intended for amateur woodworkers. Its object is to guide beginners in the purchase and use of tools, &c. The author is obviously a practical man, and the photographs with which the book is well provided clearly show the actual methods of handling tools. A lack of precision in the language detracts from the value of the letter-press, which is otherwise to be commended. The author attributes the introduction of woodworking classes in schools to the popularity of amateur carpentry. We should rather say it is due to the special value of woodworking as a hand and eye training.

Elementary Woodworking. By Edwin W. Foster. viii. + 133 pp. (Ginn.) 3s. 6d.—Of books to put into the hands of boys taking a woodworking course, such as is now general in elementary schools, we have seen none better than this. Part I. deals with tools and the methods of using them, and Part II. linking up the handicraft with related nature-study of American trees. No special course of work is outlined, for, as the author very properly remarks, local considerations and individual tastes differ. Both in text and illustrations the book bears distinct evidences of its American origin; these notwithstanding, it may be cordially recommended to the notice of British teachers.

First Stage Building Construction. By Brysson Cunningham. vi. + 323 pp. (Clive.) 2s. 6d.—In this revised and enlarged edition, the author has attempted, with some success, to provide for the recent and somewhat erratic changes made in the Board of Education syllabus of this subject. None of the good features of the first edition have suffered by the revision.

A Popular Guide to the Heavens. By Sir Robert S. Ball. Eighty-three plates + explanatory text and index. (Philip.) 15s. net.—There is no book on astronomy exactly like this, which may be described as a practical guide to observations of the sky at night, and an album of some of the best photographs of celestial objects and scenery now available. The volume contains star-charts simple enough to make a beginner familiar with the highways and byways of the heavens, and with sufficient detail to be a useful companion of the working observer for all stars visible to the naked eye; maps showing the positions of the principal planets for each month from 1901 to 1950; charts of the moon, and key-maps showing all the chief features of the surface of our satellite; maps and pictures of the planets Mars, Jupiter and Saturn; beautiful half-tone reproductions of photographs of nebulae, stars and comets, and a map of standard time. The explanatory notes make the maps and other illustrations easily intelligible, and the lists of telescopic objects, as well as other tables, will be useful for ready reference. Wherever the beauties of nature are studied, this book should be at hand to inspire, instruct, and interpret the signs and wonders of the starry universe. It is worth while, perhaps, to suggest one or two slight changes for a new edition. More photographs of solar phenomena might usefully be introduced, and also some photographs of spectra. A scale of miles, or the earth drawn to scale, might be introduced effectively on the picture of the great sunspot of 1898; Father

Fenyi's pictures of solar prominences should be reproduced white on a black ground like Prof. Barnard's photograph beneath them; the words "maximum totality" should be printed in the diagram of the upper solar eclipse represented on Plate 14; a larger scale photograph of the globular cluster in Hercules, or a picture of another cluster, would be better than the one reproduced, as the centre of the cluster now looks like a spot of light instead of separate stars; to describe the changes photographed around Nova Persei as "moving nebulae" in the inscription of the illustration is inconsistent with the explanation given in the explanatory text.

The Country Day by Day. By E. K. Robinson. xix. + 371 pp. (Heinemann.) 6s.—There is more than a delightful breath of fresh air in this book; there is poetic feeling, sympathetic expression, and scientific acumen. The book is far superior to the many volumes of essays on nature in general and nothing in particular which have lately been published as contributions to natural history, though they consist, in the main, of sentimental nonsense. For every day of the year Mr. Robinson has a page of appropriate description, in which he pictures the ever-varying aspects of plant and animal life; he holds the mirror up to animate nature and faithfully reflects her features throughout the year. Perhaps here and there a suggestion of rhapsody may be detected, reminiscent of the imitators of the style of Richard Jefferies, but on the whole the pages reveal the author as a naturalist familiar with the habits and adaptabilities of living things, and a writer whose style will inspire others to acquire the same knowledge. The plates which illustrate the book are beautiful examples of the application of photography to nature-study.

Mathematics.

An Introduction to the Calculus, based on graphical methods. By Prof. George A. Gibson. xiii. + 225 pp. (Macmillan.) 3s. 6d. This book is based on Prof. Gibson's larger work on the Calculus, and references are frequently made to that book for amplification of some matter, or more rigorous proof of some theorem. The arrangement of the chapters has evidently been determined by the desire to give students some acquaintance with the practical use of the calculus at the earliest possible stage. Thus, after explaining how to differentiate x^n , and an assemblage of terms of that form, and showing that the differential coefficient of a function equals the gradient of its graph, the author at once proceeds to elementary integration and to discussion of maxima and minima. Then he shows how to differentiate a product and quotient, and follows on with another chapter on integration of algebraic expressions, the author giving

the formulæ for $\int \frac{dx}{x}$ and $\int \frac{dx}{ax+b}$, though they are not proved

till Chapter XII. The applications of the calculus to various geometrical and physical problems are given before the student is shown how to differentiate the trigonometric functions. Chapter XI. deals with Fourier's series, and numerical examples are carefully worked out showing how to express an arbitrary function in such a series. Then comes Chapter XII., showing how to differentiate and integrate inverse circular functions, and logarithmic and exponential functions. But in spite of this curious order the book is full of interest, both on account of the many interesting problems in which it abounds, and because it contains several methods of treatment which are not found in the usual text-books, such as a neat, simple proof of the convergency of the sine and cosine series; and perhaps the last chapter is specially interesting, dealing with graphic integration and its application to finding centres of gravity and moments of inertia of plane curves. There is a useful index.

A Handy Book of Logarithms, with Practical Geometrical Appendix. (No author's name.) 128 pp. (Blackie.) 2s.—In addition to the common logarithms of numbers and of the circular functions, the book contains a table of hyperbolic logarithms and several other tables—squares, square roots, cubes, cube roots, reciprocals, circular functions, lengths of circular arcs, areas of circular segments, circumference and area of a circle to a given diameter, &c. The tables are clearly printed and are all useful, but we are rather doubtful of the "handiness" of the book. Thus the logarithms of numbers from one to 9999 at intervals of one are tabulated to six figures, but the differences for one alone are given, and the logarithm of a five or six-figure number has to be obtained by calculation of the proportional part. The logarithms of the circular functions, at intervals of $10'$, are also tabulated to six figures, but no differences at all are given. In practice the calculation of proportional parts is very tedious; the tables would have been more serviceable had the logarithms been given to fewer places, especially as six significant figures will rarely occur in the work of students, for whom apparently the book is designed. The appendix reminds one of the old-fashioned books on practical mathematics, and contains some useful constructions; the section on trigonometry is, however, out of date.

Theoretical Geometry for Beginners. Part IV. By C. H. Alcock. ii. + 224 pp. (Macmillan.) 1s. 6d.—This part maintains the high standard reached in the first three parts. In the earlier pages the theorems and problems on similar figures which form the contents of Euclid's sixth book are treated in full detail, though in many respects the treatment differs from that of Euclid; the arrangement adopted is very satisfactory, and leaves little to be desired in respect of simplicity and clearness. About one half of the book is devoted to subjects that used to be known as "sequel to Euclid." The selection of propositions is exceedingly good, and the range is wider than we were accustomed to in editions of the "Elements." The exercises are very numerous, and, so far as can be judged at a first reading, are in every way suitable for the pupils who are likely to use the book. We should prefer to see the expression "compounding ratios," as well as the phrases "duplicate ratio" and "triplicate ratio," discarded from text-books; when ratios are treated exclusively from the point of view of commensurable magnitudes these phrases seem to be peculiarly inappropriate. It is, however, a matter for thankfulness that the theorem of Euclid VI. 19 is stated in terms of the squares on corresponding sides, though the phrase "duplicate ratio" is dragged in an alternative enunciation.

Art.

The Artistic Crafts Series. School Copies and Examples. Selected by W. R. Lethaby and A. H. Christie. (John Hogg.) 5s. net.—We naturally turn with interest to a set of drawing copies put forward jointly by the professor of design at the Royal College of Art and one of the inspectors of the London County Council, and our expectations are in a measure justified. We have here a series of reproductions from works of art which is strikingly different from the ordinary school copies. This first instalment consists of twelve plates, a large proportion of which are taken from old woodcuts. The animals from Bewick are very attractive specimens, which should prove most interesting to the student. The two reproductions from Italian sixteenth-century books do not bear enlargement so well, and, interesting as they are in themselves, might be rather misleading to the student who was set to copy them by encouraging him to think that, after all, accuracy was a matter of very little importance. Further, in spite of their prefatory note, the editors do not seem to realise to what an extent the rotten line resulting from enlargement is likely to influence the pupil. The plates also

include two not very interesting reproductions from the "Flora Londinensis," the English Coat of Arms (coloured), and an old English Ship of War from a tapestry redrawn from Charnock's "History of Marine Architecture," but there is in this nothing in any way to indicate tapestry or any other process. Altogether, fresh as this first part certainly is, we do not seem to have found by any means an ideal set of drawing copies, or one which has any practical reference to "Arts and Crafts."

Philp's Nature-Study Drawing-Books. By A. F. Lydon. 3d. net each.—These provide the student with accurate and intelligent renderings of the natural forms and with guide lines to help him to copy them with some measure of success. It is a pity that the quality of the colour-printing is not always as pleasant as it might be.

Miscellaneous.

Hazell's Annual for 1905. Edited by W. Palmer. 756 pp. (Hazell Ltd., and Hodder & Stoughton.)—The twentieth issue of this useful annual is well described by its sub-title as a cyclo-pædic record of men and topics of the day. Schoolmasters will find here a concise summary in fourteen pages of the state of education in Great Britain in 1904. The publication will make a valuable addition to the constantly used reference books in a school library.

Life of Thomas Arnold, D.D., Headmaster of Rugby. By Arthur Penryn Stanley. Popular Edition. With a preface by Sir Joshua Fitch. xxxix. + 778 pp. (Murray.) 2s. 6d. net.—There is now no excuse why every schoolmaster and schoolmistress should not read this educational classic. To obtain a volume of some eight hundred pages, bound sumptuously in red cloth, gilt, for half-a-crown is in itself excuse enough to add the book to one's library. When, in addition, it is a delightful account of one of our greatest schoolmasters by a distinguished pupil of his, to which an illuminating preface by the late Sir Joshua Fitch has been added, we are sure few of our readers will fail to secure a copy of the work.

The Teachers' Rabelais. Prepared by Geraldine Hodgson. 80 pp. (Blackie.) 1s. net.—This booklet will serve to give the reader an idea of the educational views of Rabelais. Rabelais is interesting, even in a translation, and if the reader is at loss to understand what lessons are to be learnt from the account of Gargantua's education, the editor's part of the book will give him all the help required.

An Unwritten Chapter in the History of Education. By Dr. H. Kingsmill Moore. xxii. + 350 pp. (Macmillan.) 7s. 6d. net.—This is the story of the Society for the Education of the Poor in Ireland, afterwards known as the Kildare Place Society, the records of which remained unknown till recent years. Started in Dublin, in 1811, by a few public-spirited Irishmen, it improved upon the Lancasterian methods recently adopted by the British and Foreign Society in London. It established a model school in Dublin with 1,000 pupils, which attained a European reputation, where it trained as many as 2,500 teachers. It made grants to country schools, beginning with eight in 1815, and ending, in 1830, with 1,634, having an average attendance of 84.5. It inspected these, established libraries and made grants to their teachers. On the advice of Mr. (afterwards Sir Robert) Peel, the Chief Secretary, the Government voted, in 1815, a sum of £6,980—the first grant of public money ever made to primary education—and increased it later to £30,000 a year. Yet the Society failed. It had made it a fundamental principle that the Scriptures should be read in the schools without note or comment. This did not satisfy the Roman Catholics, who, led by O'Connell, then working for Repeal in 1819, denounced the Society. A Government Commission, in 1824, also reported against the religious instruction, but the Society

refused to give way, and the new Government of 1831 withdrew the grant and established the present National Board. Dr. Moore's book is not only a valuable chapter in educational history, but contains a very interesting discussion of methods of teaching and training used in primary schools a hundred years ago.

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 Glass Blocks in Refraction.

EARLY in a school course on Light it is usual to introduce an experiment with pins and glass blocks, in order to determine the "index of refraction." The customary method is open to the objection that it assumes, on the part of the teacher, a knowledge of the result to be arrived at, and is, in consequence, purely a verification of a known law. But the experiment may be more broadly treated and utilised to lead, on inductive principles, not only to the existence of an "index of refraction," but also to the examination of the limiting case.

In the first place, pupils will be set to find the paths of several rays, of varying obliquity, passing through the glass. It is a once apparent that the amount of bend increases as the incident rays become more inclined to the normal. A ray striking normally will also be found to be undeviated. It now becomes necessary to examine carefully what connection exists between the directions of the incident and refracted rays. To do this the inclination of each ray must in some way be measured. The usual method of expressing an incline, such as may be found on every railway, is to describe it as a rise of 1 in 100, 2 in 225, &c. In case the ray falls normally on the glass surface, the incline is zero. For any other direction the incline is measured by drawing a perpendicular from any point, on the direction of the incident ray, to the normal, e.g., if NO (Fig. 1) be the normal to the glass surface, AO the direction of an incident ray,

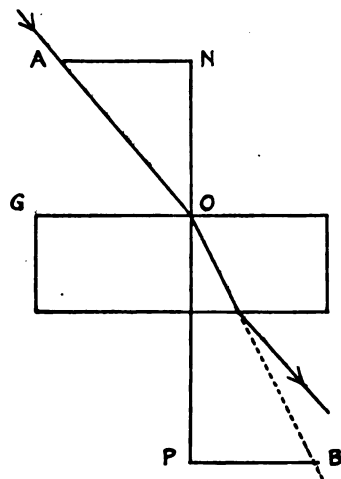


FIG. 1.

AN the perpendicular drawn from any point A in AO to NO, then the incline will in this case be $\frac{AN}{AO}$. In the same way the incline of the refracted ray OB will be $\frac{BP}{BO}$, where BP is the

perpendicular from any point B, in the direction of the refracted ray, to the normal. When these relations have been determined for each pair of incident and refracted rays, the next course will

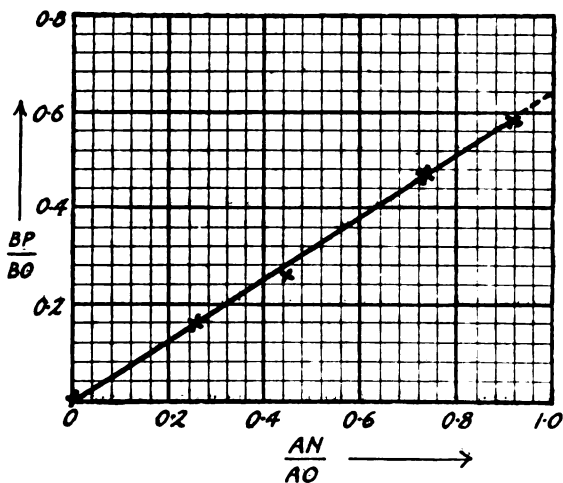


FIG. 2.

be to obtain a graphical picture of the connection between them. In an actual experiment carried out by a boy with crown glass, the following ratios were got:—

$\frac{AN}{AO}$	$\frac{BP}{BO}$
0.00	0.00
0.25	0.16
0.45	0.26
0.72	0.46
0.92	0.58

Taking now the incline of the incident ray, $\frac{AN}{AO}$, as abscissa, and that of the refracted ray, $\frac{BP}{BO}$, as ordinate, the accompanying curve (Fig. 2) is obtained. As will be seen, it closely approximates to a straight line, one point only being appreciably out.

The meaning of the curve will be clear to any pupil who has worked through a satisfactory preliminary course in physics, and he should be able to write it down as

$$\frac{AN}{AO} = k \cdot \frac{BP}{BO}$$

where k is a constant. If the term *sine* is not yet known to the pupil, he may now be given the name, since he will understand what it indicates, and the equation becomes

$$\sin \hat{i} = k \sin \hat{r},$$

or

$$\frac{\sin \hat{i}}{\sin \hat{r}} = k,$$

where \hat{i} and \hat{r} are the angles of incidence and refraction respectively.

The above evidently amounts to a rediscovery of Snell's law in the case of glass. The numerical value of k —the index of refraction—may either be taken from the curve, or calculated from each pair of ratios in the table.

Pushing the consideration of the curve further, it will occur to the teacher to ask what is the greatest value that $\sin \hat{i}$ or $\frac{AN}{AO}$ can have. It will evidently be when the perpendicular

AN and the hypotenuse AO become identical, or $\frac{AN}{AO} = 1$, that is, when the incident ray is parallel to the glass surface GO. Assuming that the above law holds for all possible values of $\sin \hat{i}$, the maximum value of $\sin \hat{r}$ or $\frac{BP}{BO}$ can be read off from the curve. In the case before us it is 0.64. The angle corresponding to this, as taken from a table of sines, is $39^\circ 48'$.

If now the ray be considered as reversed in direction, proceeding outwards from the interior of the glass, the physical interpretation of the result will be that a ray striking the inner surface of the glass at an angle of $39^\circ 48'$ with the normal will travel along the surface of the glass, whereas any ray making a smaller angle than this will emerge. In other words, $39^\circ 48'$ is the "critical angle" for glass. Looked at somewhat differently, the result given by the equation

$$\sin \hat{i} = k \sin \hat{r},$$

in the special case where $\sin \hat{i} = 1$, is

$$\sin R = \frac{1}{k},$$

where R is the "critical angle."

HENRY GARRETT.

Graph Tracing.

TEACHERS unfamiliar with elementary analytical geometry may be glad to know a more organised way of dealing with graph tracing than mere plotting of points, and teachers who are mathematicians to learn that such methods may be used without difficulty in ordinary algebraical teaching for young pupils. My experience is that boys can be led to trace curves with more certainty and with an understanding of the aims of graph tracing.

In the case of an equation of the first degree it might be demonstrated:

(1) That if the equation is put in the form $y = mx + c$, m determines its direction and c its actual position. Thus, in the case of $5y = 3x + c$, if any value of x is increased by 5, the corresponding value of y is increased by 3, and so, if a series of points, A, B, C, D, &c., be found in this way, AB, BC, CD, &c., will be hypotenuses of right-angled triangles whose sides are 3 and 5 units; whence AB, BC, CD, &c., are shown to be in the same straight line, whose direction is determined by the ratio $\frac{3}{5}$.

If A, the first point, had been taken on the axis of Y for some special value of c , then, if c were given different values, A would occupy different positions on the axis, but B, C and D would have the same position relative to A as before.

(2) That, in particular, if $c = 0$, the line passes through the origin. And in general for any function of x and y in which the absolute term is zero, if $x = 0$, then a value of y is obtained, also = 0, i.e., the graph passes through the origin.

(3) That $y = mx + c$ and $y_2 = m_2x + c_2$ make equal angles with the axes.

(4) That $y = mx + c$ and $y = -\frac{1}{m}x + C_2$ are at right angles.

3 and 4 may be shown by the same method as No. 1.

It should be insisted on that an equation of the first degree is a straight line, and that it is only necessary to plot two points in order to trace the graph.

For the equation of the second degree I have found it advisable to treat typical curves in their simple forms.

(1) $x^2 = y$ parabola.

y cannot be negative; positive and negative values of the same numerical value of x give only one value of y , no greater limits to x or y . Therefore the curve is symmetrical about the axis of y , is above the axis of x touching it (since the origin is on the curve, and since when $y = 0$, $x^2 = 0$ gives two coincident

values of x , each $=0$), and goes to infinity in the positive direction.

(2) $xy=c$ hyperbola.

x and y must have the same sign; if $x=a, y=b$ satisfies it, then $x=-a, y=-b$ also satisfies it. Therefore there are two branches of the curve precisely equal and similarly situated, but in opposite quadrants (first and third); also no limits to x or y , but as x increases y decreases, and so on.

(3) $x^2+y^2=r^2$ circle.

The equation is at once deducible from the definition of a circle.

It is symmetrical about both axes, since a substitution of $-x$ for x or $-y$ for y leaves the equation unaltered, x and y must each lie between $\pm r$, and so for (4) $9x^2-16y^2=144$ hyperbola, and (5) $9x^2+16y^2=144$ ellipse.

Now, if the curve be moved bodily b units along the axis of Y and a units along the axis of X , equations (1), (2) and (3) become

$(x-a)^2=(y-b)^2$, having the axis $x-a=0$, and vertex a, b .

$(x-a)(y-b)=c$, having the asymptotes $x-a=0, y-b=0$.

$(x-a)^2+(y-b)^2=r^2$, having the centre a, b and radius r .

And, whenever an equation can be reduced to one of these forms, it is reduced to a standard form, and its nature, position, and some other facts are at once known.

Thus to trace (1) $x^2-4x+7=y$.

This curve is used for the geometrical solution of a quadratic equation; it may be treated suitably, therefore, by the method used for solving a general quadratic:

$$x^2-4x=y-7.$$

$$x^2-4x+4=y-3.$$

$$(x-2)^2=y-3.$$

The graph is a parabola, having an axis $x-2=0$; vertex 2, 3; minimum value of $y=3$; and coincident values of $x=2$.

(2) $xy-3x+4y=2$.

$(x+4)(y-3)=2-12=10$.

The curve is an hyperbola in the second and fourth quadrants formed by the lines $x+4=0$ and $y-3=0$.

(3) $x^2+y^2-2x+4y=0$.

$x^2-2x+y^2+4y=0$.

$x^2-2x+1+y^2+4y+4=1+4$.

$(x-1)^2+(y+2)^2=5$.

The graph is a circle whose centre is 1, -2 and radius $=\sqrt{5}$. But it is simpler in practice to trace the curve by noticing that it passes through the origin than by trying to measure $\sqrt{5}$.

It is often possible to demonstrate clearly the nature of an asymptote by showing first that terms of the first degree and the absolute term are negligible in comparison with terms of the second degree, if x and y are infinitely great. Thus the terms of the second degree give the shape of the curve at infinity, and if the terms of the second degree have (a) real factors, the curve goes to infinity in two directions; (b) coincident factors, the curve goes to infinity in two coincident directions; (c) imaginary factors, the curve does not go to infinity. Thus (a) is the condition for a hyperbola, or its limiting position is two straight lines; (b) is the condition for a parabola; (c) is the condition for a closed curve, *i.e.*, an ellipse or its special case—a circle.

It is still necessary to plot points in the case of all curves but the circle; but one has the advantage of knowing what to expect, where to begin to plot, *e.g.*, from the vertex in the case of the parabola, the asymptotes in cases of an hyperbola and the axes of the ellipse in the case of an ellipse.

F. C. BOON.

Dulwich College.

Economics and the Secondary School.

I SHALL be glad if you will allow me a little space in your columns to advocate the teaching of economics in our secondary schools.

Every subject of a school curriculum brings into play the three faculties of perception, imagination, and reasoning. Of few subjects can it be said that they bring these powers into action in equal degrees; and in the earlier stages of school life that would be unnecessary and unscientific. Not so in the last few years of school life. We should then seek to give a more comprehensive development, and if possible, in a subject which touches closely the interests of every-day life. Economics is peculiarly fitted to meet such a need. It brings into play all the faculties of the intellect, and in almost equal degrees; thus affording an excellent training for our youth in the closing years of their school career.

Further, being essentially a study of man in his relation to wealth, it trains the sympathies together with the intellect, and this can be said of few other subjects. It is a study which lies at the root of those social questions which the citizen must decide, and so it would be well to initiate our youth into its fundamental principles before they leave school, for few of them proceed to the universities, where alone the subject is taken up.

The members of our Town and County Councils are drawn for the most part from those who have finished their education in secondary schools. In these days of such vast municipal enterprises, they will be called upon to discuss large issues. Let us give them a groundwork for further enquiry and intelligent discussion in these social problems. Many are destined to be employers of labour; let us awaken their sympathies for capital and labour alike.

We make this claim only for the upper forms of our secondary schools; and for them a knowledge of the main principles of capital, labour, banking, &c., would not be difficult of acquirement, would be interesting, would afford an excellent training, and moreover would be of immense usefulness. Let us make some provision by which our secondary scholars, most of whom are ultimately intended for business, may acquire an insight into the workings of our banking and industrial systems, and into the theory of international trade.

History, on the side of economics and industry, is comparatively little touched upon in our schools. Important as are the political events, for example, of the last two centuries, a study of them from social and industrial points of view would give them a new, interesting, and educative significance. It touches more nearly the life of to-day, and can be brought into relation with it.

It is gratifying to notice the growing popularity of economic studies at the provincial universities, and the fact that a Tripos in Economics has been established at Cambridge. These are signs of the growing importance attached to social and industrial studies, and whatever can be done to foster it will be a step in the right direction.

N. Y. Z.

The Teaching of Geography.

PERHAPS the results of our experience in the teaching of geography will be of assistance to some of your readers, who, of course, have had the same difficulties which my colleagues and I have encountered in dealing with a difficult subject. We found, as others have done, that wall maps, named and coloured in the ordinary way, were not altogether satisfactory, and, therefore, after one or two preparatory experiments had been made, we adopted the following method of constructing the maps for ourselves.

The Educational Supply Association provides a species of dark green linoleum, which is specially prepared for use with black-board chalk. The outlines have first to be copied from existing maps by means of tracing paper; the back is then rubbed over with white chalk, so that, when placed upon the linoleum—"Cretaline" the makers call it—and the lines retraced with

pencil, a delicate chalk impression is left. This line has only to be painted in with a fine paint-brush in white oil paint, and the map is ready for use.

So much for construction ; and now one word on its advantages. A pupil can be brought out to the map, provided with a piece of chalk, and told by his teacher to trace out the course of this or that river, the lie of a mountain range, or the trade route from Liverpool to New Zealand or Hong Kong. Or, again, with a map of England, the railway systems can be shown in various colours, centres of iron, wool, or cotton industries can be appropriately indicated, all with a lucidity which it is impossible to obtain from the ordinary wall-map. Add to this the moral effect produced on the youthful imagination by the sight of the world on Mercator's Projection, six feet by five, upon which he has to display his geographical knowledge ; and this, not in the privacy of a written examination, but before a critical set of youngsters of his own age and attainments, each one of whom is thirsting to correct the slightest error made by his classmate at the map, and you have at once an enthusiasm created which, though not all, is at least an important factor in the successful teaching of geography.

EDWARD KING, S. J.

Wimbledon College,
Wimbledon.

Lanterns for School Use.

I HAVE been requested by the Electrical Company, 121-125, Charing Cross Road, W.C., to mention that an improvement has been made in the Projector Lamp, illustrated in my article in the February number, with the aid of a block supplied by them ; and that the present price of the lamp is £2 10s. I should also like to direct the attention of your readers to a Nernst Projector Lamp I have seen at Messrs. Griffin and Sons, of Sardinia Street, Lincoln's Inn Fields. This lamp is provided with an electrical heater in the shape of a flat zig-zag placed entirely behind the filaments, thus obviating any obstruction to the light.

ALBERT GRIFFITHS.

Birkbeck College, E.C.

Foreigners as Pupils in English Schools.

DURING the past ten years I have been head of a school of a somewhat exceptional kind, and perhaps a concise account of my experience may be of interest.

The school consists of foreign boarders and English day-boys. Usually, about one-third are foreigners. The average age of the day boys is fourteen ; that of the foreigners, eighteen years. The boarders are generally Spaniards, Mexicans and Armenians. As a rule, the foreigners study English exclusively for business purposes. Most of them, after a course of English study, go into Mexican mercantile houses. Mexico offers to the youth of the Spanish upper middle classes a similar sphere of action to that which India affords to young Englishmen ; except that the former, instead of aspiring to official appointments, devote their energies to trade. Certainly to-day commerce presents the largest and the most remunerative field to enterprising young men of average ability.

Such of them as have studied the language grammatically before their arrival in England are able to speak it fluently and write it correctly in about twelve months. Others who knew nothing of it previously take two years, or even longer. They read, write from dictation, and study English grammar with the English boys ; but they have special lessons in conversation, translation, correspondence, and business training. They do well in the terminal examinations in the subjects they take up. One gained good marks in the College of Preceptors' examinations, but failed to satisfy the examiners in arithmetic. The cumbersome

and unsystematic English tables, of which a knowledge is required to work the sums, present an almost insuperable difficulty to one accustomed to a scientific decimal system of weights and measures. Too much praise cannot be given to the foreigners for their docility, diligence and quickness of comprehension. They possess in a marked degree that quality of "gravitas" which, perhaps, might be rendered "sense of responsibility."

Their good example has had a most marked effect on the conduct and diligence of the young English boys, who, when they see these big fellows content to work hard and make the best use of their time, quickly and almost imperceptibly acquire the same habits. The foreigners take part in games with the little boys, and always show themselves perfectly good tempered and considerate towards their smaller and weaker English schoolfellows. I have not met with a single case of bullying or ill-treatment. Although these young Spaniards are allowed a great deal of freedom and have a liberal allowance of pocket money, they never allow their liberty to degenerate into license or use it as a "cloak of maliciousness." They are most thoughtful and considerate in the house. During the whole time I have had to send away two boys only. They take the greatest interest in football and cricket matches. They learn to play tennis, which is something akin to their favourite Spanish ball game Pelota, and they ride bicycles.

In conclusion, I may say that I had a letter from an old pupil from abroad last week, who says : "Dear Sir, I don't like England and English, I love them." It is something to have instilled this idea of our country into foreigners.

A. A. E. GOODALL.

**THE STUDY OF PEDAGOGICS BY
CORRESPONDENCE.**

The School World Club.

BOOK FOR STUDY.

Essays on Educational Reformers. By R. H. Quick. (Longmans, 1902.) 3s. 6d.

WEEKLY DIVISIONS OF THE BOOK.

Week	I. Chapters I.-III. (inclusive).	Week VIII.	Chapters XIV. and XV.
"	II. Chapters IV. and V.	" IX., X., & XI.	Chapter XVI.
"	III. Chapters VI.-VIII. (inclusive).	" XII.	Chapter XVII.
"	IV. & V. Chapters IX. and X.	" XIII.	Chapters XVIII. and XIX.
"	VI. Chapter XI.	" XIV.	Chapters XX. and XXI.
"	VII. Chapters XII. and XIII.	" XV.	Chapter XXII. and Appendix.

Comments and Questions on the reading of Weeks IX., X. and XI., to be sent to the Editors on or before March 15th.

SELECTED COMMENTS ON CHAPTERS XI.-XV. (INCLUSIVE).

CHAPTER XI., Section 26-9. The neglect of the mother tongue in the school, which the Port-Royalists set themselves to remedy, has continued until now. There seems, however, some probability that the unique value of intelligent instruction in the mother tongue as a preliminary to the study of language and literature will presently be understood in English schools. The recent circular of the Board of Education and the public utterances of men in educational authority all point in this direction. It is interesting to note that the same neglect was pointed out by Hoole and others. It seems inevitable that constant reiteration of a truth, however obvious, must precede a real perception of it.—H. DACOMBE.

Section 37. *A vast amount of instruction is thrown away because the instructors will not wait for the daybreak.* The schoolmaster is, of course, supposed to know everything. Only

schoolmasters themselves know how wild such a supposition is. But whatever else a teacher may neglect with impunity, he ignores the sciences which explain the order and manner of physical and mental development, at the risk not only of educational failure but of positive pedagogic wrong-doing. "There is a season and a time to every purpose under the heaven" . . . "a time to keep silence and a time to speak." The wise instructor will acquaint himself with what the physiologist and psychologist have discovered as to brain growth and the unfolding of the immature mind, so that he may present the new subject with wisdom and opportunely.—F. T. MARRICK.

It is gratifying in these times, when large schools and educational institutions are daily increasing in public favour, to find that such high authorities as the gentlemen of Port-Royal believed in children being educated in small numbers; while the still greater names of Locke and Rousseau are associated with even more individualistic training.—S. MARION JONES.

CHAPTER XII. Section 4. *Suggestions of radical change usually come from those who never belonged to the class of teachers, or who, not without disgust, have left it.* Quick recognises this frankly enough; but how seldom does the schoolmaster do other than resent the suggestion from outside. He may admit in general terms that "the outsider sees most of the game," but comes to the conclusion apparently either that school work is not a game, or that education is not to be included in the popular generalisation. Suggestions which have eventually proved fruitful and invigorating when put into practice have generally first been disposed of as the idle imaginings of arm-chair philosophers with no practical experiences.—G. H. WYLS.

CHAPTER XIII. Section 6. This discussion of Locke's definition of knowledge and the reference to the views of Rousseau and Comenius has a direct bearing, as Quick indicates, on the proper methods of teaching geography. There is, in view of several modern experiments, a peculiar interest in this part of the month's reading. As Montaigne said, *Savoir par cœur n'est pas savoir*, and it is beginning to be recognised that the memorising of topographical tags is not learning geography. The line of study indicated by Comenius—when he said: "Children begin geography when they get to understand what a hill, a valley, a field, a river, a village, a town is"—is the direction along which the teacher must make inquiries if he wishes his pupils to gain geographical knowledge.—R. A. WEST.

Section 20. Even after reading this and the following section I cannot help thinking that, if boys and girls can be as well educated by useful subjects, we ought by preference to place these on the school time-table, even if we are disposed of as merely "utilitarians."—O. DEWEY.

CHAPTER XIV. Section 12. *Rousseau was . . . one of the greatest of Educational Reformers.* Whatever we may think of Rousseau as a man and a citizen—and most of us will think of many of his weaknesses—we must admit that in some remarkable manner he was able to outline most of what we call to-day educational reforms. *Emile* outlines the "heuristic" method of teaching science, modern geometrical instruction, sane geographical teaching, and the need for manual exercises. The importance of practical work is emphasised also. Schoolmasters ought certainly to be students of Rousseau.—T. ELLIS.

MUTUAL AID.

THE object of these columns is to afford teachers the opportunity of asking questions of and giving assistance to colleagues. The questions received to which replies are solicited will be printed first; following these will be the answers which have

been sent in, and to make such replies intelligible to all readers, they will be accompanied by the question.

Readers are invited to send answers to any of the questions asked below by our correspondents.

The questions should deal only with educational matters, using the expression in a broad sense, and the publication or otherwise of any question must be left entirely to the discretion of the Editors.

Questions and answers should be addressed to the Editors of THE SCHOOL WORLD, St. Martin's Street, London, W.C., and should be accompanied by the full name and address of the sender, though not necessarily for publication. Each question or answer should be on one side only of a separate sheet of paper.

QUESTIONS.

E. R. D. Wanted the publisher and price of any annotated edition of Addison's "Cato," or failing this, the text published separately.

J. M. S. Can any reader kindly tell me of some book on geography which (i.) explains *why* a particular trade has sprung up in a certain town or district; (ii.) which goods are exported and imported at each port?

A. B. Can any reader tell me the meaning of the italicised words in Joanna Baillie's song, "The Chough and Crow?"

"The night wind sighs with feeble moan
Like infant charity."

A. B. Wanted the name of the publisher of Chaucer's "Astrolabe," with notes (*not* the E.E.T.S. edition).

C. H. C. (i.) Why does mercury fall when a tube of it is inverted over water, *i.e.*, why could not a barometer consist of a tube of mercury inverted in water?

(ii.) Has any science master had trouble in the determination of CO₂ in copper carbonate? I find it impossible to get anything like a good result either by heating or by solution in dilute hydrochloric acid. Why is this?

(iii.) What simple way of finding the mass of salt in 1 cc. of a salt solution is there other than by evaporation?

H. H. W. From whom can I obtain, in quantity, cardboard or other models of French coins, for use in class?

QUESTIONS WITH ANSWERS.

A. L. P. *Where can I obtain a copy of the "Classified Catalogue of Books on English History," by Mr. Brayshaw?*

T. W. S. You should communicate with Mr. A. Neave Brayshaw, Bootham School, York.

The School World.

A Monthly Magazine of Educational Work and Progress.

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The Editors will be glad to consider suitable articles, which, if not accepted, will be returned when the postage is prepaid.

All contributions must be accompanied by the name and address of the author, though not necessarily for publication.

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No. 76.

APRIL, 1905.

SIXPENCE.

STUDIES IN SCHOOL MANAGEMENT.

IV.—ORGANISED GAMES IN CONNECTION WITH THE LARGE DAY SCHOOL.

By R. CARY GILSON, M.A.

Headmaster of King Edward's School, Birmingham.

AS no one will be likely to read this paper who does not think that organised games are essential to the well-being of an English school, I shall assume the truth of that proposition, merely remarking that both the good and the evil associated in our minds with "athleticism" appear to me to be, in a manner, accidental. I do not believe that the elaborate system existing, say in our most famous public boarding-schools, was in origin a well-considered scheme for strengthening boys' characters, or even their arms and legs. The English are a nation of sportsmen. School sports, and, it may be added, the British Empire, grew up out of this circumstance, and the discovery of their beneficial reaction upon national character came later. The anti-intellectual atmosphere unfortunately existing in some places where athletics—or at any rate athletes—are made too much of, is a social phenomenon having deep-seated causes which go far beyond the region of school management, or even of education. I am with our critics in holding that this anti-intellectual atmosphere constitutes a national danger of a serious kind, and I have certain views as to how the danger can be averted; but a mere reduction in the amount of cricket and football played at school appears to me a ludicrous remedy, like reducing the nursery milk-supply to avoid encouraging a drinking habit in the rising generation.

Leaving out of account a few preparatory and private schools, where athletics certainly occupy too much space in the prospectus, I am not acquainted with any boarding school at which games are played too much, or any day school at which they are played enough. The emphasis is on the word *played*, for if, in a school of six hundred, eleven boys play cricket through a summer day, and five hundred and eighty-nine maintain a fitful interest in the proceedings by the aid of lemonade, cherries, and sweet biscuits, subsequently spending the evening in the discussion of averages, caps, and perhaps the scandalous partiality of the captain

and his friends, that is a school in which much time and energy are wasted upon cricket, yet not enough cricket is played. I confess unbounded admiration for Mr. Pellatt's ideal match-ground of sixty pitches, on which two entire schools might contend at once; together with probably heretical views about the moral obligation of "looking on;" but I shall not lack support in the opinion that the "gladiatorial" and individualistic elements are responsible for nearly all the mischief done by school games, and that four times as much actual play would not increase but tend to diminish the evil. All the nonsense about averages and records, and the misdirected hero-worship which turns the schoolboy's ideals and ambitions upside down, presuppose a large basis of what has been forcibly called "vicarious athleticism." Remove this basis, and the hideous superstructure reared by indolence, false taste, and the sporting press, will topple and disappear.

Now it is just in the town day-school, where an adequate amount of actual play is the most necessary, that its provision is in practice the most difficult. Not only is space (the first requisite) enormously expensive, but the amount of "plant" really needed upon it is much greater than in a boarding school. Where the school and "study" windows look out upon the playing-fields a pavilion is little more than an ornamental luxury. On the distant field of the city school—distant in any case from the homes of many of the boys and in most cases from the school itself also—it is an absolute necessity. It must be of ample size, and include accommodation for washing, bathing, and the drying of clothes, as well as a dining-room, shelter for bicycles, and a cottage for the ground man. The extent of the field should not be less than two acres for every hundred boys in the school, and more is desirable. Without in the least holding that a school eleven require a ground of "Lord's" or "Oval" perfection on which to disport themselves, I think that at least one good square of turf, with room for several changes of pitch, must be reserved exclusively for cricket. There are not many soils on which it is possible to play both football and cricket without diminishing either the frequency or the popularity of both games. A well-found establishment will also possess a swimming-bath and at least a "miniature" or "safety" rifle range. No account is taken here of the gym-

nasium, which, for reasons to be stated presently, must be more centrally situated. Fives courts are also much more useful at the school itself, if space at all permits. Hazlitt, indeed, reckons this game as the finest exercise for the body and the best relaxation for the mind, maintaining that *post equitem sedet atra Cura* "would not have applied to the fives player"; but in the youthful training of a "political animal" it can scarcely rank on a par with cricket and football. To use a Harrow expression, it is essentially a "yard game," and, as such, unrivalled. Apart from these things, and from superfluous luxuries such as a racquet court, the cost of the equipment will inevitably be great, but will naturally differ very much with local circumstances. The eleven-acre field belonging to the school with which I am most familiar lies in a suburban district about three miles away, and is rented on a ninety-nine years' lease, at £233 per annum. About £2,000 has been expended in fencing, levelling, and re-turfing, and the pavilion cost rather more than this sum. Concerning running expenses I shall have something to say towards the end of this paper.

Though I am far from asserting that organised games cannot be attempted in connection with a large day-school until the whole of the provision just described is complete, I believe I have enumerated nothing of which the real utility can be doubted, or which can be omitted without in some way curtailing the educational effect of the school. For example, if either the washing, drying, or catering arrangements of the pavilion are insufficient, some boys must go home on dark winter afternoons after a hard game, muddy, wet, or unfed. They may have a considerable journey to make, involving connections on the railway, or between the railway and the tramway; and the headmaster is left without answer when the mothers complain about "catching cold." Cleanliness, dryness, and a little food are essential in the circumstances. The first two cost next to nothing when the permanent provision is once made, and, as for the third, an excellent cup of tea with bread-and-butter or a slice of cake can be retailed at twopence with a profit.

Now let us suppose the arrangements made: how are the boys to be induced to come and profit by them? Some would answer boldly, "Make the games compulsory." My own judgment is decidedly against this course, and in favour of making participation in the games quite voluntary; while attendance at the gymnasium should be compulsory. Space forbids a statement of all the reasons, but two of them are as follows. Gymnastics are undeniably beneficial to all boys except the physically disabled, who, if the gymnastics are of the right sort, will be an insignificant percentage; and their utility has little to do with personal inclinations. I am not quite sure that games—at all events compulsory games—are good for the character of everyone; and this will only be deemed a surrender of the whole position by those who think that all boys are born approximately alike, inside. With anyone who holds this view I am unable to

argue; on educational subjects we have no common ground. The second reason is that the practical good of organised games altogether seems to me to depend on the willing co-operation not only of the boys but also of their parents, and compulsion, even when apparently successful, has a considerable tendency to alienate this.

How, then, are the boys to be drawn in? By preaching, a little, but mainly by practice. It must not be forgotten that the impediments at a day school are very real, though it is only in a few cases that they will be found insuperable. The most serious of them are expense and lack of time. There is no royal road to the overcoming of either. Expense must be kept down by constant vigilance and economy. The boys themselves should have a hand both in raising and spending the money, but a permanent "Ground Committee" of masters is also highly desirable. To them the ground man will be directly responsible, and they will manage many matters for which more knowledge of affairs is required than the boys possess. Extravagance in "colours," badges, and prizes for athletic sports must be specially guarded against. The ground man's remuneration will consist partly in the use of his cottage and the right to sell materials and refreshments under proper supervision. With all economy the expenditure of the School Games Club will be at least five shillings a term for every boy in the school, independently, of course, of anything that may be spent on a cadet corps.

On the other side of the account will be the boys' own subscriptions, graduated according to age or position in the school; but a supplement for running expenses from some other source is necessary in most schools. Education authorities have now, apparently, legal power to grant money for such purposes, and their own education, together with that of governing bodies in general, is proceeding. Well-to-do and well-disposed parents may be appealed to, and individual governors, old boys, and other friends of the school have in some instances done magnificent things. Appeals of this sort, however, are more appropriate and usually more successful when the object is some tangible piece of capital, such as a proper pavilion, than when it is only a question of making ends meet year by year. Parents of present pupils stand in a different position in this respect from the other possible contributors I have enumerated. Inasmuch as in most day schools the pupils are getting a good deal more education than they are paying for, it is surely not unreasonable that those of the parents who can afford it should contribute a little more than the bare amount of their sons' club subscription towards the maintenance of the social and corporate life of the place. The model parent will not only pay the small terminal subscription with the utmost alacrity, but will also send the treasurer a guinea or so once a year so long as he has any son in attendance at the school. Such annual donors should be regarded as honorary members of the school club, and care will be taken to send them complimentary tickets for School Athletic Sports or any similar occasions

when there is any attempt at a "gate." Things are in a healthy condition when the ordinary boys' subscriptions provide a moiety of the annual expenditure, the other half coming from the Governors' grant (which should be made to the "Ground Committee") and the donations of honorary members.

The scarcity of time, which arises from the great consumption of that unpurchasable commodity in the process of getting to and from a day school, though occasionally amounting to a physical impediment (in which case there is no more to be said), is more generally to be reckoned among psychological deterrents; and with a few remarks on this side of the matter I will conclude. Practice, as already said, avails more than preaching. The greater the number of boys, and of masters, who take part in the games, the greater the interest of the games, and the larger the inducement to the rest to take a hand. Experience proves this cumulative effect in the most convincing way. Nearly everything that adds to the number of the effectives may thus be justified and recommended. "Foreign matches," even with distant schools, are in their right place as a means and not as an end. It is not necessary, or, as I think, desirable that all other play should be suspended while they are being contested. The danger of playing by proxy merely, with its attendant evils, is, however, much less urgent at a day school than in a boarding school.

The arrangement of the sides for internal matches is a far more important detail than might at first sight appear. Various systems have been tried. The ordinary school division into forms, sets, &c., is unsuitable for obvious reasons. "Picking up" is only to be tolerated for occasional practices, or on days when real stress of weather has thinned the attendance. Its adaptability to such an occasion is just the drawback to its employment on any other. It puts a premium on irregularity and irresponsibility. No one can feel a sense of duty to a side which will not come into existence till five minutes before the game. Mere alphabetical distribution is but little better. Division by locality (of the boys' homes) has proved a success at Clifton (in respect of the numerous day-boys), and has the immense advantage of continuity and the generation of something like "patriotism," of however restricted a sort. It would not answer in some towns because its lines would inevitably be too near those of social cleavage, the last that any reasonable being could desire to see reinforced at school. On the whole, I cordially recommend the "house system." Let *house-masters* first be chosen, their actual places of residence having of course nothing whatever to do with the matter. Divide the whole school, effectives and non-effectives alike, in approximately even numbers between the house masters, and let the personal link be a permanent one. New boys will be distributed impartially by the headmaster at the beginning of term, and if possible before anything is known even by him as to their athletic capacities or probabilities. The house lists may be printed and posted in conspicuous positions. The fact that every boy

has a pigeon-hole made ready for him in an organisation of this sort will go a long way, without any Coercion Acts, towards inducing him to occupy it and do himself credit in it. Those who are familiar with the height to which "house feeling" is apt to run in a boarding school will be prepared to hear of its possibility even where the house is a fiction, but the full merits of the fiction can only be appreciated by those who will give it a trial. I may add that I claim absolutely no originality in respect of it, and owe its inception and successful working in my own school entirely to my colleagues.

THE BIOLOGICAL SIDE OF NATURE STUDY.

I.—PLANT LIFE.

By OSWALD H. LATTEK, M.A.
Charterhouse.

AN invitation from the Editors to write one or two articles on suitable Nature Study enquiries for boys and girls gives me the opportunity of setting out in brief the method which I believe to be the best, and indeed the only scientific mode of using this branch of study in education. It is related of a much-ploughed candidate in Responsions that he knew every *question* that could be asked within the four corners of the syllabus of that examination. There are many teachers who, while fully appreciating the value of nature study for juvenile pupils, are at a loss as to how to proceed, because they have not the experience that is to be gained only by service in the Great Examination Schools of Nature. There is no doubt that an interest in biological research can be easily kindled in the minds of most, and especially of young people. There is probably no subject which affords more constant exercise to the powers of observation; nor should we forget either the utilitarian and economic, or the æsthetic aspect of the question. A person whose eyes are open to the problems of the living world can never find time heavy on hand, but has continually before him objects that excite interest and add enormously to the pure pleasures of life.

In accordance with the terms of my reference, I shall in these articles confine myself to subjects biological, and endeavour to sketch a few lessons connected with living plants and animals, and suitable for quite young pupils. And here let me remark that there is no living thing about which we know everything, and that it may well fall to the lot of a sharp-eyed, thoughtful child to detect some illuminating fact which has hitherto eluded the notice of mankind. I assume that the teacher is prepared to impart no information which can be obtained by the efforts of the pupils themselves; that he will avoid distraction by suggesting questions and directing attention to some definite set of phenomena during each out-of-door lesson; and further, that he will himself take an active part in

the research, and not hesitate to set questions to which he does not himself, as yet, know the answer.

For school purposes it will probably be found convenient to take some one small area, and make this the centre of the nature-study course. Any area that will support even the scantiest vegetation can be made a fruitful field of inquiry. One of the most interesting holidays that I ever enjoyed was a month devoted chiefly to studying the fauna and flora of a sand dune. For our present purpose, however, let us imagine that the selected area is a hedge with a rough bank at its foot, and a ditch upon one side. Such a strip of ground will contain enough, and more than enough, to occupy the attention, and to suggest problems for years. In the present article we will consider the plant life only, and at most only a portion of that in any detail. Let us imagine that there are to be found growing in our hedge examples of the following trees: ash, beech, blackthorn, elder, elm, hawthorn, hazel, holly, maple and oak. A careful study of these ten species at the various seasons of the year will form an excellent beginning. Even to country-bred persons who know every tree by sight in winter and summer alike, it is often difficult, or even impossible, to say *how* they recognise and discriminate between the familiar species. I should advise that the study be begun in winter, or at any rate when the trees are bare, because the general habit, mode of branching and so forth, of the deciduous trees is more easily made out in the absence of foliage.

The pupils should be made to note down as the result of their own observations whether the bark on the main stem is smooth, or rough and cracked; the general arrangement of the fissures; whether the bark is thick or thin; the character of the bark on young twigs should be compared with that on older portions, and endeavours should be made to find out reasons for the differences. For example, why is the young bark (epidermis) hairy in some trees, whereas there are no hairs upon the older bark of the same species? Or again, why do some trees have smooth bark, but others rough? Is there any connexion between the thickness of the bark and the nature of its external surface? At what age do lenticels (cork-warts) first appear upon the bark, and how are they arranged in the several species? I do not pretend to be able, satisfactorily to myself, to answer all these questions, nor is it my intention to give the answers to those that I can. These, however, and many other questions that I am about to suggest, are bound to present themselves to anyone who would endeavour to find out something of the life of the plants. They are, therefore, suitable subjects of enquiry for teachers and pupils working in conjunction with each other. It must not be forgotten that a question which arises in winter may, and often will, have to await solution till some other season; and it is distinctly desirable that a fair number of such problems should be under investigation.

Even in winter a few of the deciduous trees will no doubt retain some of their leaves; to which of

the trees does this apply? What determines the retention or abscission of the leaf? Is the timber of these trees harder or softer than that of the others, and how does it compare in this respect with that of the evergreen tree in the hedge? Why should the wood of these trees possess this property?

A brief examination of a twig still bearing leaves will enable us to determine the relation between the leaf and the winter buds, and will lead to a comparison of the buds of the various species. How are the buds arranged upon the branches of these ten trees? Why are they so arranged? Has the arrangement anything to do with the shape or size of the leaves in summer? Does it in any way influence the general appearance of the tree? What contrivances does each species of bud possess as a protection against wintry weather, or against the attacks of animals?

Dissection of the buds and examination of longitudinal and transverse sections enable us to ascertain the number and the nature of the bud-scales, and the manner in which the foliage leaves of the future shoot are disposed within the outer envelopes. Do the bud-scales represent modified blades, or stipules, or bases of leaves? How many scales are visible upon the outer surface of each bud? Is the number constant for each species? Are there any winter buds which are partially or entirely naked, and devoid of such scales? If so, how are they protected? How are the foliage leaves within the bud folded? Is there any connexion between the manner of folding and the shape of the fully expanded leaf in summer?

As the days lengthen the flowering of the trees will claim attention. When does each species blossom? Does this occur before, or after, or simultaneously with the appearance of the foliage? What is the general character of the blossoms that appear before the leaves? How do they contrast with those that appear after the leaves are well developed? What reasons are there for these differences? Are both sexes present in the same blossom? If not, are they found on the same individual or on separate trees? What arrangements are there to secure pollination? Is cross-fertilisation secured, and if so, how? Does cross-fertilisation ever occur? If so, how, and in what circumstances? To these questions answers can only be obtained by careful observation and numerous experiments, seasoned with patience.

The flowering period over, the early growth and gradual ripening of the fruits present a fresh series of phenomena. What parts of the flower persist and take part in the formation of the fruit? What special duty is performed by each part? What is the colour and attitude of the immature fruit? Does any change take place in these respects as the fruit becomes ripe? If so, what is the purpose and the advantage of such changes? When does the ripe fruit part company with the parent plant? By what means is the separation brought about? What arrangements are there for securing that at least some of the seeds shall be carried to a distance from the parent? What protective devices are

there to ensure the safety of the embryo plant within the seed until such time as it sets up business for itself? With what capital is the child provided by its parent?

A collection of the ripe seeds will provide material for indoor work during the winter. If the seeds are well soaked there is no great difficulty in dissecting, at any rate, the larger specimens, and in ascertaining some of the many ways adopted by plants in neatly and securely packing up their offspring and providing them with sustenance. Assuming that the essential structure of a seed has been found out, it may be asked—how are seed-stem, seed-root and seed-leaves arranged? Where is the food-store placed? Of what is it composed?

It is best to make sure of observing the germination of the seeds by sowing some of each species in pots or trays. It is difficult to procure and even to recognise the earliest stages of all the seedlings in the open field; but the difficulty is much diminished by a preliminary introduction obtained with the help of a hot-house or warm frame. How does each seedling make an exit from its protecting envelopes? How and in what shape does it first rear its head into the light of day? What parts of the embryo are lifted above the soil, and which remain buried? Do the first leaves resemble or differ from those that follow? What reasons can be discovered for the answer to the last question?

The extent to which any student can pursue his or her investigations will, of course, greatly depend upon the amount of knowledge already possessed. The more we learn the more conscious of our ignorance do we become—the more thickly do further questionings press against us; but the better equipped are we for dealing with them. An acquaintance with the elements of plant physiology obtained by working through a course such as that so admirably sketched out by Prof. Miall in the columns of *THE SCHOOL WORLD* (vol. iii., pp. 57-60, vol. iv., pp. 304-307) will greatly enhance the interest of this outdoor work, and should form the indoor complement of it.

I have by no means exhausted the questions that will inevitably arise in connexion with the few trees of my text. My object is merely to point out the method which must be pursued if nature study is to be of any educational value. I have entirely omitted all reference to the climbing plants, ivy, bramble, rose, honeysuckle, and others which will doubtless occur: neither have I considered any of the lowly herbs which will be found in profusion on the bank and on the sides of the ditch, nor the means of defence which are possessed by plants to enable them to hold their own among their vegetable competitors, and to protect themselves against the attacks of slugs, snails, insects, as well as of the larger herbivorous animals. In a book that will shortly be published by Messrs. J. M. Dent & Co., and from which parts of the above are virtually extracts, I have endeavoured to apply this method to a considerable range of subjects, imparting little or no information, but merely

guiding the course of enquiry by appropriate questions.

A child, or an adult, with no knowledge of plant or of animal life does not know where to begin work; the very absence of knowledge prevents the realisation of what is borne in upon every true student of nature, viz., that all life is a struggle; that there is the vital problem of ways and means to be solved by every organism; and that no detail of structure, however trivial, is without significance. And yet who can explain the value of every part of the commonest grasses of the field? I conceive it to be the duty of one who would teach the study of nature first to learn enough to know how much he knows not, and then to guide the pupils by well-arranged questions to learn for themselves how much they may learn by the use of their eyes, and how much there yet remains to be learnt.

In a subsequent article it is proposed to illustrate the same method as applied to animal life.

A SCHOOL FIRE BRIGADE.

By C. C. CARTER, M.A.
Felsted School.

I.—FIRE APPLIANCES.

TWO articles appeared in *THE SCHOOL WORLD* in August and September, 1903, dealing with certain aspects of fires in school buildings—the prevention of panic, the clearing of the building, and the use of small fire-extinguishing appliances. The schools referred to in those articles were, one gathered, of the large day-school type. The fact that the kingdom possesses a great number of large boarding-schools and similar institutions suggests that some account of the organisation and drills of a school fire-brigade may be of interest and use. Different schools are placed in different circumstances, and hence fire organisations must vary according to the water supply, the proximity to town brigades, and so on. A large number of schools, however, are in the heart of the country, and this means that regular brigades are only to be got from a distance. Distance means delay, and delay generally means disaster when buildings are on fire. Hence it is advisable, not to say necessary, to provide fire-fighting appliances and a brigade on the spot.

The main object will be the provision of such appliances as are necessary for life-saving and fire-extinguishing, and the knowledge of their use. The number of boys required for the brigade will depend on the number of appliances to be brought into action. It will be best, therefore, to consider the appliances first, then the composition and organisation of the brigade, and lastly the drills and general training.

FIRE APPLIANCES.

Mr. Clay, in the articles referred to, has considered the smaller apparatus. It will only be

necessary here to turn to the larger machines used by every properly equipped brigad . Of these there are two—a fire-escape and a fire-engine.

The escape is, of course, of the first importance. As it will be worked by boys, certain factors will have to be taken into account which could be put

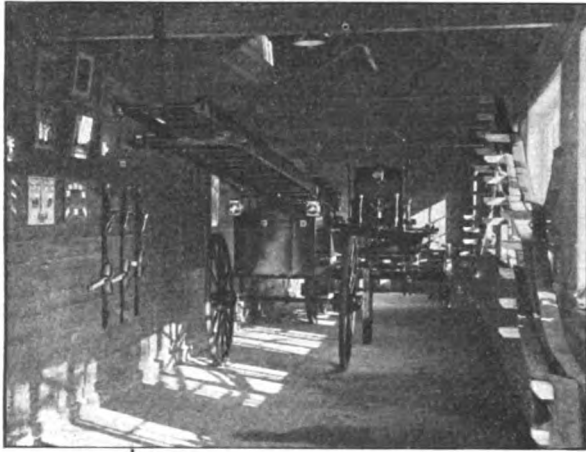


FIG. 1.—Fire Station, showing manual engine, escape, telescopic ladders, hose-drying pegs.

aside by a town brigade. In rescue work a few seconds may be of the utmost importance. This means that the escape must be as light as is consistent with the necessary rigidity. The height to which the ladders are to extend will depend on the school buildings in question; they should reach certainly to the highest window, better to the highest roof. So, too, the more simple in construction and working the machine is, the better, for a boy is not likely to be more than two years in the brigade; he is hardly strong enough before sixteen years old and he probably leaves at eighteen. There will thus be a constant change of men and consequently no time to spend in learning the details of a complicated machine. An escape with two ladders, main and extending, will probably be long enough for most schools, and need not weigh more than six hundredweight *in toto*. This, with regular drills, can be brought into action and extended with great speed. Certain smaller appliances are advisable for use with the escape; the most important are sound ropes and axes. Each boy working with this machine should have a thoroughly strong belt. To the belt should be attached a snap-hook in order that he may hook himself to one of the rounds of the ladder. This is partly for safety (for he is not likely to be very skilled in working at a height above the ground), and partly that he may have both hands free. The hand-axe fitting in a case will hang from the belt, on which he should have also a 20-ft. line for a variety of purposes.

It may be argued that such an escape is both very expensive and not necessary; that a liberal supply of canvas chutes should be ample safeguards. The chutes, no doubt, are splendid means of escape. They should be placed in all parts

likely to be cut off by fire. There is, however, a limit to their use. It must be remembered that it is hardly possible to keep all boys instructed as to how to fix and use them; if the boys imagined to be cut off are small, they may not have the necessary strength to raise and fit them. Further, an alarm of fire as often as not seems to deprive many people of their senses and render them helpless. Lastly, and most important of all, the people cut off may quite conceivably be insensible from heat or smoke; help can then only come from without. Considerations such as these make it extremely important that means be provided for reaching every window. The fifty pounds which such a machine costs will surely be well spent in removing so far as one can the possibility of loss of life.

There are several firms who build escapes, and excellent machines they are—light, strong, and easy to work. The ladders have the additional advantage of being detachable—that is, the top or sliding ladder can be taken off in a few seconds. One thus has two separate first-floor ladders for rescue and hose work. The combined ladder with extending gear can also be taken off the carriage and so used in alleys too narrow for the carriage to penetrate.

To extinguish a fire powerful jets of water are necessary, for it is the force of the stream rather than the quantity of water that puts out the flames. These streams may be supplied by means of hydrants attached to water mains, if such exist. If the school is situated in the country, however, the water supply is probably derived from wells, and then the whole question will require careful consideration. Probably the simplest solution of the difficulty will be to utilise the water of the

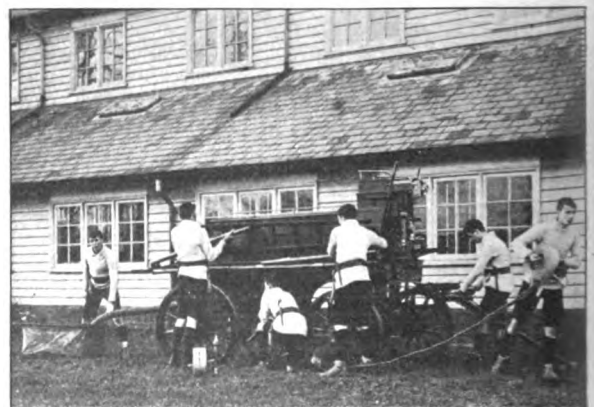


FIG. 2.—Engine Drill (6 men), showing method of unrolling hose; the man kneeling is coupling the hose to the engine.

school swimming-bath, the requisite pumping being done by an engine stationary or movable. In the case of the latter there is a choice between steam engines and manual engines, of which the steamer is the better in every way. Light steamers with a capacity of 100 to 200 gallons per minute are

coming into increasing use for the protection of private property. They are available for general pumping purposes—*e.g.*, watering cricket grounds—as well. The manual, no doubt, can be got ready quicker, but with the patent boilers now on the market a steamer can produce working pressure in



FIG. 3.—The Fireman's Lift, showing the positions in lifting and the security of the hold, with one hand left free.

from five to ten minutes from the time of lighting the fire. The extra power and volume so obtained will more than counterbalance the minute or two gained by the manual—if indeed the manual will gain at all; for by the time pumpers are arranged those minutes gained will probably have been lost. A steamer requires no very special knowledge in the working, and does away with the everlasting difficulty of providing pumpers and relays of pumpers for drill purposes and hose testing.

Of hose there are several kinds, but good, plain canvas hose will answer all requirements. It lasts well if properly kept. A thorough brushing and frequent washing are necessary after use. It must be perfectly dry before being stowed in the hose-box or hose-cart. Dirt and damp bring destruction quickly. Long lugs (*i.e.*, pieces projecting from the couplings) are to be commended; the hose then is easier to unroll, and the coupling can be made tighter by hand. The amount required depends on the distance to be covered. It must be borne in mind that hose will burst from several causes. There must therefore be enough to allow of holding several lengths in reserve. If there is no length ready to replace a burst length, the whole brigade is rendered helpless.

The expense of providing fire-fighting appliances is by no means small. But if they are expensive, they are good, and the station in which they are housed should be worthy of them. The building should be of sufficient size to allow cleaning to be done and hose to be dried inside it. For the latter, the usual plan is a tower up which the hose may be hung, but a little ingenuity will suggest alternative methods. The chief point is that the hose should

lie as nearly vertical as possible that the water may drain away. If it cannot be arranged indoors, hoists will have to be fixed to a pole or the southward facing, *i.e.*, sun-facing, wall of a building. With our changeable weather, however, especially in winter, the hose may lie on the hoists for weeks without being properly dried. The building itself should be lighted artificially as well as by window. Darkness increases the confusion and excitement, of which there is bound to be a certain element in a brigade composed of boys.

Of course all gear, large and small, must be kept rigidly clean. A dirty engine, dirty lamps or dirty belts militate enormously against a soundly disciplined and keen brigade, as well as meaning that gear will soon be in bad working order. Arrangements should be made to have everything cleaned once a fortnight at least, better once a week. All gear and appliances should be regularly inspected and tested. Things are very liable to get out of place in a hundred and one different ways. A fire-bucket empty, a tangled rope or a misplaced key, may cause untold damage. In a word, a fire-station should be a model of cleanliness and good order. Every appliance should have its place and be rigidly kept there. Everything should be kept ready for a "turn out" at any moment.

SECONDARY EDUCATION IN RURAL DISTRICTS.

THE CAMBRIDGE AND COUNTY SCHOOL.

By CLOUDESLEY BRERETON, M.A.

UP to 1902 County Councils were greatly hampered in the direction of establishing secondary schools. A reference to that useful periodical, the *Record of Technical and Secondary Education*, will show that even before that date their efforts had been by no means fruitless in aiding existing schools or reviving ancient foundations, such as the Brewood Grammar School, Stafford, or Sexey's School, Blackford, while providing a certain amount of secondary education in the day departments of their Technical Institutes. Since the passing of the Act of 1902, which makes the local authorities directly responsible for higher education, they have entered on a still more vigorous policy. They have taken over, or are taking over, schools already established, like the Liverpool Institute or Enfield Grammar School. They have steadily pursued the system of reviving old endowments, while liberally supplementing them from their own funds. And in a few instances, both before and after the Act, the County Councils have defrayed, in conjunction with another major or minor local authority, the entire cost of building and financing a secondary school.

In one case, at least, the expense has been borne

by a single local authority, entirely unaided by endowments, subscriptions, or the contributions of another local authority. The Cambridge and County School has been founded by the Cambridge County Council at a cost of between £12,000 or £13,000, and receives an annual grant of some £500 a year. As part of the county, the borough has provided its share, but has not otherwise made any special contribution. We have here, then, an earnest of what a spirited local authority can do out of its own unaided resources, as well as a useful object lesson to other county councils who sooner or later will have to tackle the bricks and mortar question if we are to have an adequate supply of secondary schools.

The school has further claims on public interest from the thorough way in which it deals with the problem of the education not only of the lad from the county town, but also of that somewhat neglected individual, the boy who comes from a rural district.

The question, it is true, has met with a certain amount of attention in sundry parts of the county. Twenty-five out of the fifty counties, ridings and divisions into which England is split up, contain between them some fifty secondary schools with an agricultural side or bias. Some are the creation of the local authorities or under their patronage; others owe their origin, like Lady Warwick's School at Bigods, to private initiation; others, again, are endowed schools, like Bedford Grammar School. Comparatively few, either singly or conjointly, cover the entire county area so completely as the Cambridge and County School. Moreover, they are very unequally distributed about the country. The West Riding has six and Cheshire has five; but Devon, the largest administrative county, and almost wholly agricultural, has apparently only one; and Norfolk, the second largest, has none. Yet when we reflect that at least a third of the population of England still live in districts that are largely rural, it is obvious that the supply of schools giving such an education is considerably less than it ought to be, even if we allow for the creation of other departments than that of agriculture.

What we want in the country is something of the nature of the Higher Primary School in France, whether it be christened secondary or not is a minor matter, which really serves as a continuation school to pupils leaving the elementary school at 11 or 12, and provides for specialisation at the top, either agricultural, industrial, or commercial. The curriculum of the Cambridge and County School, which conforms to such a type, is full of useful hints to all county councils who desire either to plan out courses of study for the secondary schools they are building, or to re-model the curricula in aided or municipalised schools in order to bring them more in accord with the needs of the district they serve. The importance of adapting the schools to local requirements is very clearly brought out in the scheme of administration of the Cambridge and County School. It is laid down that—

The object of the school is to supply a good and suitable education for boys who are likely to follow industrial and commercial pursuits. It having been ascertained that there were nearly 1,500 persons in Cambridgeshire following the occupations of farming, market gardening, and fruit growing, whose children mostly attend rural elementary schools up to 11 or 12 years of age, after which no special provision for further suitable education existed, it was deemed desirable to establish an agricultural science school to fill the gap between the elementary school and the University Agricultural Department, supplying a course of education to occupy the years between 12-13 and 17-18. As building is the second largest industry in the district, and drawing, mechanics and elementary building construction and surveying should form part of the education of every farmer, it was considered desirable that the school should include a Building and Engineering Department. But neither the education of the farmer nor builder could be complete without book-keeping and other commercial subjects, and as most boys of the industrial classes require preparation for commercial life, it was decided to include also in the advanced course a special branch for Business and the Civil Service.

The curriculum is divided into a junior and senior course. Differentiation commences in the latter. There are, in fact, three sections. The Agricultural, which includes:

Chemistry with practical application to agriculture, botany (with practical work), biology (with practical work), geology (with field work), elementary building construction, hygiene, land-surveying, mechanics as applied to agricultural processes, mathematics, book-keeping, woodwork and forged iron work. It is not expected that any boy will study at any one time all the subjects in the course, but during the three years over which the course will extend all these subjects will be taken in suitable order.

The Building and Engineering section includes:

Mathematics, mechanics, land-surveying, drawing, practical, plane and solid geometry, building construction, geology (with field work), hygiene, book-keeping, with woodwork and architecture.

The Commercial section includes:

Mathematics, English composition, French, German or Latin, book-keeping, shorthand, précis writing, type-writing, commercial geography and history, commercial law, natural science and drawing.

It is wisely laid down that—

Whilst no actual trade or calling is taught, no effort is spared to give the instruction a most suitable, useful, and practical character preparatory for the leading occupations in the neighbourhood. For instance, no attempt is made to teach farming—that must be learnt practically on the farm and in every-day life—but boys are taught, in the agricultural course, the chemistry of manures, foods and soils; the principles of mechanics, plant life and animal life; plain carpentry, and how to set out a building or carry out a simple piece of farm engineering. Similarly in the Building Trades course, a boy is not taught to be a carpenter, but drawing is thoroughly taught, especially in connection with surveying and the principles of building construction, together with such other subjects as will enable sons of builders and builders' foremen in any department to enter on these occupations with all the preliminary knowledge and training that a school can afford.

The time table (appended) shows the distribution of subjects and the time allotted to each in the different classes.

Subjects.	Sixth Form Fourth year, and Fifth Form Third year.	Fourth Forms Second year.	Third Forms First year.	Second Forms Preparatory.	First Form Preparatory.
	Time given. Hrs. min.	Time. Hrs. min.	Time. Hrs. min.	Time. Hrs. min.	Time. Hrs. min.
Mathematics	5 0	5 0	5 0	5 0	<i>Arithmetic :</i> 3 20 <i>Object Lesson</i> (Nature Study): 1 40 <i>Hand and Eye</i> <i>Training :</i> 1 40
Science	5 50	5 50	5 0	5 0	2 30
Building and Mechanics	} alternatives.	} 0 50	} 0 50	} 0 50	} 2 30
Commercial, Latin or German French					
English	3 30	3 30	3 30	3 30	<i>Dictation, English,</i> <i>Reading, Composi-</i> <i>tion, Spelling :</i> 9 10
History and Geography	2 30	2 30	2 30	2 30	<i>History, Geog-</i> <i>raphy, Writing :</i> 3 30
Gardening or Woodwork	1 40	1 40	2 30	2 30	..
Drawing*	0 50	3 20	3 20	3 20	2 30
Drill	1 0	1 0	1 0	1 0	1 0
Scripture or Singing	1 30	1 30	1 30	1 30	1 30
Singing	..	..	0 50	0 50	0 50
Total	27 40	27 40	27 40	27 40	27 30 per wk.

* Also Building and Machine Construction. Shorthand and Type Writing are taken out of school hours.

The advanced course in the commercial division seems the least satisfactory. As the Headmaster himself points out, owing to the amount of time that under the Board of Education's regulations has to be devoted to science and mathematics, insufficient time is left for book-keeping, shorthand, typewriting, précis writing, office work and commercial law, which have to a certain extent to be taken out of school hours. However, there seems a reasonable expectation that the number of hours allotted to science and mathematics may be reduced by the Board in the near future. The fifty minutes given per week to Latin or German in the other classes does not seem to be of much value. If at least one period cannot be taken from science and given to it, it were better to cut out the subject altogether.

The teaching of the subjects seems directed on sound lines. In chemistry, for instance,

the method is purely experimental. The boys, in the elementary course at least, have no formal instruction in chemistry. They examine substances, first by their own unaided senses, and, when these will carry them no further, they are encouraged to suggest experiments which should be performed in order to obtain answers to questions relating to the different substances handled. Such questions are for the most part raised by the boys themselves, and every effort is made to teach them to devise the apparatus which is best for the performance of the experiment.

The elementary course is spread over two years, and then the advanced course is begun. After the thorough training of the earlier years, the boys are now in a position to read works on

chemistry intelligently, and therefore, in addition to practical work, lectures or lessons may be given.

On the good foundation thus laid of chemical knowledge the pupil, it is held, may safely specialise in those parts of the subject which concern agriculture.

The biological work of the school begins in the lowest classes, and is continued through the school course. There is a large and well-equipped laboratory. Throughout the course

the attempt is made to arouse interest in living objects as independent working organisms, and to study practically their relations to external conditions. With this end in view attention is mainly directed in the lower classes to the study of external forms in relation to function and environment, and to experimental work in plant physiology. In the more advanced classes a study is made of external structure and of the lower forms of life in their relation to one another and to more highly organised types. At this stage work with the microscope is introduced, and for this purpose, again, the school laboratory is well supplied with all the necessary appliances.

Some of the simpler things, such as reagent stands, are made by the boys in the workshops. Boys doing microscopic work contribute to a microscope fund for adding to the apparatus. In connection with the agricultural course, work is arranged upon the diseases of plants due to fungus and insect pests and upon a few types of the animal kingdom. These boys also go through a course of practical gardening and horticulture. For class-work boys are encouraged to bring their own specimens, which are supplemented from the University botanical gardens. It is hoped to add a regular botanical garden in the near future with a greenhouse. Experimental plots have already been started. Gardening and field-work are encouraged out of doors in the spring and summer, and a school museum has been created to which the boys themselves have contributed many specimens.

The teaching of physics is largely experimental. The art instructor begins in the first year with simple copies of plant and other forms in outline with pen, pencil, or brush, and the drawing of common objects in every-day use, together with the ordinary exercises. This drawing from nature continues in the second year. In the third mechanical drawing is introduced, as well as building-construction. The latter comprises brick-work and stonework of various kinds, simple plans and elevations for outhouses, the planning of a labourer's cottage, &c., &c. Much insistence is laid on the teaching of literature and the need of a good school library, as a literary-laboratory is dwelt upon. The importance of mathematics as the base of machine construction and drawing is fully brought out in the curriculum, while the theory and practice of mensuration and land-surveying are taught concurrently. The manual training in woodwork consists of a three years' course, and is eminently practical.

The fees amount to 30s. a term, and include the free use of class-books, stationery, &c. Boys out-

side the county area are charged a higher fee. The school opened in September, 1900, in temporary buildings. The first term there were forty-four boys. In September, 1903, it moved into its present permanent buildings. These are already full to overflowing. The pupils numbered, according to the last reports of the Headmaster, 278 plus 29 pupil teachers. Ten applicants had to be turned away for want of room. The Headmaster estimated that if room could be provided the numbers would easily rise to 380. The statistics of the areas from which the pupils came show eighty-two boys from the Borough, forty-five from Chesterton and Cherry-hinton, which are virtually suburbs; this means a little more than half the school come from the urban districts. The county itself supplied ninety-five, the Isle of Ely nine, Herts thirteen, Suffolk eleven, and Hunts two. No less than 110 boys travelled by train. Of the parents fifty-two are farmers, ninety-five commercial managers, travellers, and clerks, thirty professional or retired, thirty merchants, brewers, &c., twenty retail traders, forty-three artisans, labourers, &c., eight elementary schoolmasters. The number of boys taking the advanced course in the agricultural section was two, in building and engineering thirteen, in commercial or professional forty. More than one-sixth of the boys, or above 16 per cent., have been at least three years in the school, which shows it is not merely used as a finishing institution. No doubt the percentage will rise, as the school as yet is but four years old. Judging not merely by the numbers, but from other indications, the school has already during its short existence won the confidence of the parents to a remarkable extent.

THE LONDON SCHOLARSHIP SCHEME.

THE London Education Committee has at last brought its Scholarship Scheme to port, much buffeted, but with its outlines practically unchanged. It has been criticised from many points of view—from that of the plain man who, with Sir Melvill Beachcroft, found that “no one who was not an expert could fathom the real inwardness of it”; from that of the financier who, with Lord Welby, complained of the “consensus of silence” with regard to the cost of it; from that of the politician who, with Mr. Crooks, was anxious to maintain the income limit in order to “safe-guard the interests of those least able to help themselves”; and from that of the elementary-school teacher who, with Mr. Yoxall, would never be “so short-sighted (not to say, stupidly selfish) as to advocate restrictions on the supply of candidates for the teaching profession,” but who, all the same, finds it necessary to condemn the scheme for the comprehensive reason that “it interferes with the general system of transfer of scholars from public

to elementary higher schools,” whatever that may mean! The proposals emerge from the storm of criticism almost unscathed.

Characteristically, little has been said upon the purely educational side of the matter; for which, no doubt, the framers of the scheme are devoutly thankful. To conciliate every opposing interest, and to find enough wind to fill the sails, must have been a hard enough task, and if here and there a concession is to be detected which cannot be defended on educational grounds—well! Educationists in England are a feeble folk; we must be grateful things are no worse.

To the present writer the greatest defect in the scheme is the refusal to recognise the minimum four years' duration of the secondary school course. The junior County scholarships are tenable “up to the end of the school year in which the scholar attains the age of 14 years,” though with a possibility of renewal for two more years. When the Technical Education Board began its work we were still entangled in the heresy that the secondary school course was a kind of ornamental coping-stone to the elementary column; the junior County scholar, having finished his elementary school course, was to be given a finishing two years at the secondary school. We know better now. We realise that the secondary school can be approached by more than one avenue, that its period overlaps the last one or two years of elementary school, and that its course is planned to end not earlier than the sixteenth birthday. The age of 14 marks the end of the race for the majority of elementary school children. It is hardly even a turning post on the secondary school course. The boy who leaves such a school at 14 years of age is in grave danger of becoming a half-educated clerk, unable to earn a living by his brains, and ashamed to earn one with his hands. The more efficiently our secondary schools perform their proper service the less room will they have for such as he, and the greater the social wrong which will be done to him by sending him to them.

It is to be hoped that renewals will be frequently and freely granted. Under the Technical Education Board's scholarship system this was not so. Only by a meritorious performance in the Intermediate Scholarship examination could an extra year be obtained. The result was that in many schools junior scholars who had any chance for an Intermediate Scholarship, and some who had none, were crammed and exhausted in the effort to pull them up in a couple of years to a standard hardly to be comfortably achieved in four. A scholarship ladder is of small use when one's whole energies must be directed to prevent the other fellows from elbowing one off.

There is, of course, the other side of the question. Not all boys who win a scholarship are worth one, and if it be a waste to turn them out at 14 it would be greater waste to keep them in till 16. Most schoolmasters, however, would reply that the first year in a secondary school is sufficient test of a lad's calibre. Let the first year be a strictly probationary one, and in any case do not

make the tenure of a scholarship depend upon success in an external competitive examination.

The scheme has aroused the hostility of the elementary-school teachers because of the avowed intention of its framers to use it as a means of increasing the supply of teachers in the future. The opposition may not have been altogether disinterested; still there is much to be said for the contention that two issues are here confused which were better kept apart. It is early days yet to gauge the effect of the Board of Education's new regulations for the Training of Pupil Teachers, but most experts are coming to see that the attempt to draw the whole of the future teachers through the secondary schools must either break down from sheer costliness or result in the evolution of a new and cheap type of lower secondary school which we can well afford to do without, for it will satisfy no truly educational need. The bulk of our teachers in the future will probably pass through a modified type of higher elementary school, which will also train the children of skilled artisans, clerks, and small shopkeepers, who have not sufficient ability to win scholarships to secondary schools, and whose parents cannot afford to allow them to go there unaided.

The undesirable provision which made the continuance of the junior scholars' education beyond 14 depend in most cases upon his declaration of intention to become a pupil teacher was fortunately removed during the discussion in the Council. The profession of elementary-school teacher is an honourable one, but, after all, there are many departments of national life in which the need for recruits is just as urgent. To come back to our educational ladder, it would be disastrous folly to exchange it for a treadmill, landing the unfortunate climber upward in the elementary school in which he began.

Moreover, in the case of girls at least, such a provision appears, in the light of experience, to be quite unnecessary. Elementary school teaching offers to women a comparatively better prospect than it does to men. Large numbers of scholarship girls already become teachers of their own accord, and this tendency will doubtless continue, although the proposed stimulus of a £15 bursary will now presumably be withdrawn.

By reason of this ulterior object the number of junior scholarships has been enormously increased. Under the Technical Education Board 600 were awarded every year. Another 2,000 are to be added, and two-thirds of the whole are to be awarded to girls. The Committee has to confess that a lower standard must be adopted for the girls than for the boys if the numbers are to be kept up. It is even proposed to go down to Standard IV. for candidates. The wisdom of so sudden an increase is doubtful. Under the Technical Education Board's scheme some very poor material found its way to the secondary schools. Nine times in ten, especially of late years, boys who were low down on the scholarship list made little headway during the two years' duration of their scholarship. So far as the present writer's

experience goes, quite one-half of the successful candidates would have done better had they put in their two years in a higher elementary school, in which their elementary school course might have been continued and completed.

True, there is to be a new method of award which is certainly in accord with the best educational principles, but it will not at once reach a smooth working order, and until it does there is likely to be much waste of public resources. Not wisely is the day of small things despised when we are dealing with human material. Moreover, a scholarship system ought to grow by degrees. From the very first the title "scholar" should be one of honour, and only as the idea of gaining it gradually spreads among the children of the elementary schools and their parents ought the numbers to be, as gradually, increased.

In the conditions of award it is easy to see that the educationists, as distinct from the educational politicians, have been given their opportunity. The best method of awarding scholarships is that which accomplishes its purpose with the least interference with the normal course of the schools. If the teachers do their part loyally there will, under these proposals, be no need for any interference at all. That they will "play the game" for the credit of their profession ought not to be in doubt, in spite of some ill-conditioned murmurings. It is, in any event, a great gain that they are invited to co-operate, and are given considerable responsibility. The common-sense of the policy of distrust of the teacher has always been to seek. Upon occasions like this he is so entirely the master of the situation that without his assistance the best-laid schemes will come to nothing. But very few administrative bodies recognise this, and fewer still act upon it.

H.

SECONDARY SCHOOLS AND THE UNIVERSITIES.

III.—THE UNIVERSITY OF CAMBRIDGE.

THE aim of this paper is to show how the University of Cambridge influences secondary schools by means of the organisations which have been created for the special purpose. We shall not therefore touch on the many phases of its less direct, but perhaps still more important, influence on secondary education exercised through the courses of study which it lays down for its own students, and the rewards which it offers them, and in many other ways.

It may be stated broadly that the organisation of the University in this respect is the same as that of the University of Oxford, which was described in the March issue of this magazine. At both Universities the control of the agencies affecting secondary schools is entrusted to standing committees, which at Oxford are styled Delegates,

at Cambridge Syndicates. There are three Syndicates concerned with various aspects of secondary Education: the Local Examinations and Lectures Syndicate, instituted as the Local Examinations Syndicate in 1858; the Highest Grade Schools Examination Syndicate, established in 1873, and the Teachers' Training Syndicate, established in 1879. An important department of the work of the Teachers' Training Syndicate was described in THE SCHOOL WORLD for last April in an article on the Cambridge Day Training College, which is conducted by a sub-committee appointed by the Syndicate; but the objects for which the Syndicate was originally established must not be overlooked. These were the organisation of courses of lectures on the Theory, History, and Practice of Education, and the holding of examinations on the same subjects. The lectures have been the means of introducing many members of the University and others to the study of educational questions. On the list of those who have lectured for the Syndicate will be found the names of Fitch, Quick, Colbeck, Eve, Edwin Abbott, Arthur Sidgwick, and James Ward, and the courses of their lectures which have been published form an important contribution to our pedagogic literature. The examination is divided into two parts: (1) a written examination held in June and December at Cambridge and other centres, the subjects being the Theory and the Practice of Education, and the History of Education in Europe since the Revival of Learning; (2) an examination in Practical Efficiency. All students of not less than 20 years of age, who have passed one of certain examinations which are accepted as a preliminary test of general education, may sit for the written examination, but they cannot present themselves for the examination in Practical Teaching until they have had a year's experience in a school recognised by the Syndicate. Certificates are granted to those who pass both parts of the examination.

The Highest Grade Schools' Examination Syndicate, acting in conjunction with the Oxford Delegacy for the Examination and Inspection of Schools, forms the Oxford and Cambridge Schools Examination Board, which is familiarly known to the educational world as the "Joint Board." A full account of its work was given last month in the second article of this series, which dealt with the University of Oxford. It will, therefore, suffice to state here that it was established in order to examine the public schools and other schools preparing a fair proportion of their pupils for the Universities, and to provide a leaving examination for such schools, and that its work falls under the following main types:—

(1) The examination of a school or certain forms of a school with the object of testing the condition of the classes rather than the attainments of individuals; the examiners are, however, prepared to place the pupils in order of merit, and to award scholarships. Such examinations are usually conducted by a combination of written and oral methods.

(2) The inspection of schools.

(3) The examinations for the Higher and Lower Certificates, intended for pupils of the ages of about 18 and 16 years respectively. These examinations are conducted chiefly by means of papers set in common to the pupils of the different schools; the syllabus, however, is designed to give the schools a wide choice as to prescribed authors and periods of study. The subjects of examination for the higher certificate are divided into the following groups: (I.) Latin, Greek, French, German; (II.) Mathematics; (III.) Scripture, English, History; (IV.) Natural Science. Candidates must pass in at least four subjects taken from not less than three different groups.

The examination of a school commonly takes the form of a combination of the School and the Certificate Examinations. The work of the Joint Board extends to girls' as well as boys' schools.

The Local Examinations and Lectures Syndicate was established in 1858, a year later than the corresponding Delegacy at Oxford; on the other hand, the Cambridge Syndicate set the example in 1865 of opening its examinations to girls. These facts may be taken as significant of the influence which the two Universities exert on each other in this department of their work. The Cambridge Local Lectures or "University Extension" Movement is under the direction of this Syndicate; it lies, however, outside the scope of this paper, for although it has incidentally been of service to secondary education, its main purpose of providing the means of higher education to adults engaged in the regular occupations of life is quite distinct. Confining ourselves, therefore, to the operations of the Syndicate as an examining body, we may arrange its work under the following heads:—

(1) The *three local examinations* which are most closely related to secondary education, namely, the Senior, the Junior, and the Preliminary Examinations, chiefly draw their candidates from grammar schools, high schools, and private schools. The gradation of these examinations is marked by the limits of age beyond which candidates are not eligible for the honour classes; these limits are in the Senior 19 years, in the Junior 16 years, and in the Preliminary Examination 14 years. The examinations are held annually in December at a large number of centres at home and in the Colonies, and are chiefly conducted by means of printed papers set by a central body of examiners. The syllabus includes all the subjects usually taught in secondary schools to pupils at the various stages, and, within certain limits as to the minimum and maximum number of subjects which may be taken, as great a latitude of choice as possible is permitted. In the class lists the successful candidates are arranged, on the results of each of the three examinations as a whole, in an honours' list, divided into three classes, and a pass list; lists are also published of those who have distinguished themselves in individual subjects. In order to make the results of the examinations more fully accessible, the Syndicate

issues to teachers, on payment of a small fee, special tables showing how their pupils have individually acquitted themselves in each subject. The Local Examinations have been extensively adopted not only in England, but also in the Colonies, especially in Ceylon, Mauritius, and the West Indies, and occasionally by English communities outside the Empire; the examinations of last December were held at places so far distant as Bermuda, Valparaiso, Brisbane, and Shanghai.

(2) *The Higher Local Examination*, for which the minimum age for admission is 17 years, was in the first instance open to women only, and although this restriction has been removed, the number of men presenting themselves as candidates is small. The examination may be described as of the standard of a degree examination. As, however, all the requirements for a certificate need not be, and as a matter of fact seldom are passed at one and the same examination, candidates are often prepared for one or more of the groups, under which the subjects are arranged, before they leave school. The certificate is, under certain conditions, recognised as one of the qualifications entitling teachers to be placed on Column B of the Register of Teachers, and it is held by a large number of mistresses in high schools.

(3) *The Examination of Schools*.—In this department of its work it is the practice of the Syndicate to request the Principal of the school to draw up a full syllabus of the school work, and this syllabus serves as the basis of the examination. The visit of the examiner or examiners to the school for the purpose of an oral examination is an essential part of the system. The examiners furnish lists of the marks assigned to the pupils' written work, but their reports are concerned rather with the educational efficiency of the schools than with the attainments of individuals, and may deal with the syllabus, the suitability of the curriculum, and the organisation of the school.

(4) *The Inspection of Schools*.—Here, as in school examinations, a syllabus is prepared by the school authorities, and the inspector visits the school, observes the organisation and discipline, and the teaching, and taking into account the aims and circumstances of the school, reports on its efficiency.

(5) Examinations held on behalf of Education Committees or Colonial Governments for the award of scholarships.

These schemes may be combined in the case of any school; for instance, the upper forms may be entered for the local examinations, and the work of the lower forms may be reviewed by means of a school examination or inspection.

It must be understood that both the Syndicate for Local Examinations and the Highest Grade Schools Examination Syndicate in conducting an examination or inspection are acting on behalf of the University as a whole. If application is made under the Board of Education Act of 1899 to the Board of Education for the inspection of a school by the University, the inspection is entrusted by

the University to the Syndicate to whose province it appears to belong.

The certificates of both bodies have an important function in opening up to their holders the entrance to the Universities and to many professional careers. Under certain conditions the higher certificates of the Joint Board and the senior local certificates exempt from the Cambridge Previous examination, the Oxford Responsions, the Matriculation examinations of the Universities of London and Birmingham, and portions of the preliminary examinations of the Scottish Universities; the same certificates, and also in some cases the lower certificates and junior local certificates exempt from the preliminary examinations of many of the professional bodies.

Within the last few months both the Joint Board and the Syndicate for Local Examinations have instituted a fresh type of certificate, entitled a School Certificate. Candidates for these certificates must have passed through a certain course of education at a school inspected and approved by the Joint Board or the Syndicate (as the case may be) or the Board of Education. For candidates who have passed through a three years' course, the Joint Board has established a special examination designed for students of 17 years of age. To obtain the Syndicate's senior or junior school certificates candidates must have passed the Senior or Junior Local Examinations respectively in arithmetic, English, a second language, and three subjects selected from not less than two of the following groups:—(I.) Religious knowledge, history, geography; (II.) mathematics; (III.) natural science. Senior candidates must have received three years' education and junior candidates two years' education at an approved school. Both bodies are also prepared to issue under somewhat similar conditions Army Leaving Certificates, which will be accepted by the Army Council as a preliminary examination for candidates for Commissions.

It will be perceived from the above statement that the school examinations and inspections of both the examining bodies are devised in such a way as to leave to school staffs the freedom and elasticity in teaching which are so generally and justly demanded, and at the same time to constitute an important means of communication between examiners and teachers. The same objects are also kept in view in the various examinations by which certificates are granted. Oral examinations in modern languages and practical examinations in natural science have been introduced, and are being more extensively adopted by both the bodies. The Syndicate for Local Examinations has recently abolished set books in modern languages in the preliminary examination, and further encouraged the optional substitution of unseen translation for set books in the junior and senior examinations. It has further met the demand for freedom of teaching by offering to schools an opportunity of substituting for set books or periods of study other books or periods approved by the Syndicate as equivalent in point of difficulty.

THE STUDY OF TENNYSON'S POEMS.

By LAURIE MAGNUS, M.A.

Author of "Words and their Use," "Introduction to Poetry," "A Primer of Wordsworth," &c.

(Concluded from p. 95.)

(iii.) WHY THE ROUND TABLE WAS DISSOLVED.

First, then, to make certain of the facts. The causes of the breakdown of the ideal which the Round Table had been founded to incorporate are given in the "Passing of Arthur":

My house hath been my doom. . . .
My house are rather they who swore my vows,
Yea, even while they brake them, own'd me King.

The sequel of to-day unsolders all
The goodliest fellowship of famous knights
Whereof this world holds record. . . .
I perish by this people which I made.

They are given again at greater length in the 153 lines of blank verse, through which, "in a voice monotonous and hollow like a ghost's," Tennyson's Arthur denounces his Guinevere, and forgives her, and takes leave of her. This passage must be read in the Idyll called "Guinevere," and it is essential for the understanding of the "Passing of Arthur." Parts of it, perhaps, to-day are a little remote from modern sympathy. Our point of view as to the man's responsibility may have shifted during the last fifty years, but the speech contains of course much magnificent writing:

And all this throve until I wedded thee!
Believing "lo mine helpmate, one to feel
My purpose and rejoicing in my joy."
Then came thy shameful sin with Lancelot;
Then came the sin of Tristram and Isolt;
Then others, following these my mightiest knights,
And drawing foul ensample from fair names,
Sinn'd also, till the loathsome opposite
Of all my heart had destined did obtain;
And all thro' thee! so that this life of mine
I guard as God's high gift from scathe and wrong,
Not greatly care to lose; but rather think
How sad it were for Arthur should he live
To sit once more within his lonely hall,
And miss the wonted number of my knights,
And miss to hear high talk of noble deeds
As in the golden days before thy sin.

This, then, is Arthur's own account of it, and it must be admitted that he indulges fairly freely in the luxury of reproach and of magnanimity:

I did not come to curse thee, Guinevere,
I, whose vast pity almost makes me die
To see thee, laying there thy golden head,
My pride in happier summers, at my feet.

And all is past, the sin is sinn'd, and I,
Lo! I forgive thee, as Eternal God
Forgives: do thou for thine own soul the rest.

The melancholy music of his regret may have

soothed the wounded feelings of the King, and the long-drawn pathos of his fate, as he conceived it and described it, may have been a fit punishment for the Queen. But there is something to be said on the other side. It is not a strong man's voice to which we listen, not a great ruler's indifference to the frets of private fortune, not a resolute hero's superiority to the ruin of his personal plans. There is a note of peevishness in the music, an echo of the shrieking cry, "The woman whom Thou gavest to be with me, she gave me of the tree and I did eat." Accordingly we are not surprised to find, in other passages of the "Idylls," accounts similar to it of the failure of the ideal. Arthur, it will be remembered, quotes the sin of Tristram and Isolt as second in wickedness to that of Guinevere and Lancelot, but if we turn to Tristram's own account of the matter in the Idyll called "The Last Tournament," we get a view which is very useful in fixing the right proportions. Isolt has besought her lover for a vow of constancy, and the mention of vows arouses a bitter retort from Tristram:

Vows! did ye keep the vow ye made to Mark
More than I mine? Lied, say ye? Nay, but learnt
The vow that binds too strictly snaps itself—
My knighthood taught me this. . . .
. . . . I swear no more.
I swore to the great King, and am forsworn.
. . . . The vows!
O, ay—the wholesome madness of an hour—
They served their use, their time; for every knight
Believed himself a greater than himself,
And every follower eyed him as a God. . . .
And so the realm was made; but then their vows
Began to gall the knighthood, asking whence
Had Arthur right to bind them to himself.

We read just now the terms of the membership of the Round Table. We heard Arthur declare that those who broke his *vows* had brought about its dissolution, and here in Tristram's mouth we read how rotten was the foundation of a realm which was bound by strict vows to a personal overlord, and we hear the revolt of the knighthood against the oath which they had sworn. Tristram's knighthood itself had taught him the vanity of vows. We hear it again more passionately in the mouth of another of the knights, who says that "The King hath made us fools and liars," and who cries in another place:

Tell thou the King and all his liars that I
Have founded my Round Table in the North,
And whatsoever his own knights have sworn,
My knights have sworn the counter to it. And say
My tower is full of harlots, like his Court,
But mine are worthier, seeing they profess
To be none other than themselves, and say
My knights are all adulterers like his own,
But mine are higher, seeing they profess
To be none other. And say his hour is come.
The heathen are upon him, his long lance
Broken, and his Excalibur a straw.

Arthur, perhaps, never realised how complete was the revolt of his Court from the theory of the

Heaven-sent ruler. He never clearly perceived that the renunciation of his leadership by his followers was, in effect, a sufficient reply to his renunciation of the queen; that her sin followed his righteousness, as autumn follows the summer. But Tennyson realised it. A hint of it is given in Arthur's foreboding:

Whence the fear, lest this my realm, uprear'd
By noble deeds at one with noble vows,
From flat confusion and brute violences,
Reel back into the beast and be no more?

—*The Last Tournament.*

We hear it in his parting words,

For I, being simple, thought to work His will
And have but stricken with the sword in vain,

—lines which occur in the beautiful passage beginning,

I found Him in the shining of the stars,
I mark'd Him in the flowering of His fields,
But in His ways with man I found Him not.

—*The Passing of Arthur.*

And we hear it again in the final message from the barge,

The old order changeth, yielding place to new,

where Tennyson reconciles his readers to the purpose of his poem, which was to show that no scheme of human government, however perfect in conception, can bind the will of man. The sword as the symbol of authority—Arthur's mystic brand, Excalibur—bore a double inscription:

On one side,
Graven in the oldest tongue of all this world,
"Take me," but turn the blade, and ye shall see,
And written in the speech ye speak yourself,
"Cast me away!"

Oaths may be imposed with every ceremony which antiquity and tradition suggest, but the true sanction of conduct lies with each man himself.

(iv.) TENNYSON'S TEACHING ON LAW AND FREE-WILL.

The pupil must be led to see that Tennyson's ideal of government was not the autocracy of Arthur. His idea of virtue was not obedience to an oath, nor the infraction of an oath his idea of wrong-doing. Such a standard of conduct is foreign to the thought of the present generation, and the teacher will readily be able to show, by internal evidence, that Tennyson's sense of freedom was rather in advance of the nineteenth century than behind it, and that his poems contain the supreme poetic expression of the spirit of individual independence.

Tennyson illustrates himself to a wonderful extent, not merely in his verse, but in his conversation. No teacher's apparatus is complete for inspiring his pupils with the true love of Tennyson, unless he has read and marked certain parts of the "Memoir" by the present Lord Tennyson. For instance:

Free-will and its relation to the meaning of human life and to circumstance was latterly (writes the poet's son) one of his most common subjects of conversation. Free-will was undoubtedly, he said, the "main miracle. . . . Take away the sense of individual responsibility [as King Arthur's oath, for example, took it away] and men sink into pessimism and despair." . . . Then he would enlarge upon man's consequent moral obligations, upon the law which claims a free obedience.—*Memoir I.*, 316-7.

Then Lord Tennyson quotes the drift of his father's talks to a young man who was going to the University:

If a man is merely to be a bundle of sensations, he had better not exist at all. He should embark on his career in the spirit of selfless and adventurous heroism; should develop his true self by not shirking responsibility [note here again the difference between this view and that of the Arthurian one-man-rule], by casting aside all maudlin and retrospective morbidities, and by using his powers cheerfully in accordance with the obvious dictates of his moral consciousness, and so, as far as possible in harmony with what he feels to be the Absolute Right.

At this point Tennyson quoted a few lines, to which the teacher should come back, from the speech of Pallas in the idyll of "Ænone," after which he went on:

The real test of a man is not what he knows, but what he is in himself and in his relation to others. Then (says his son) he added characteristically: "But don't be a prig. Most young men with anything in them make fools of themselves at some time or other."

Here, perhaps, it may be hinted, if not in so many words, at least indirectly, to the pupil, that the essential cause of the breakdown of the Round Table lay in the fact that King Arthur was never suffered to make a fool of himself—that, behind the beauty of his ideal and beyond the mysticism of the poem, there was raised the barrier of Arthur's priggishness between the goal and its attainment; but this line of thought, however true in itself, and however valuable in relation to certain audiences, should not be developed to excess. The age of the pupils must be carefully considered in urging the obvious argument against an over-cultivation of the ascetic tendency. The teacher will find a more fruitful source of inspiration if he pursue Tennyson's own line of thought and contrast the idyll of King Arthur with the ideal rejected by Paris when he chose the gift of Aphrodite in preference to that of Pallas. Tennyson never leaves us in real doubt as to his view of the true meaning and nature of power:

Self-reverence, self-knowledge, self-control,
These three alone lead life to sovereign power.
Yet not for power (power of herself
Would come uncall'd for) but to live by law,
Acting the law we live by without fear;
And, because right is right, to follow right
Were wisdom in the scorn of consequence.

—*Ænone*, 142-8.

These seven lines from the speech of Pallas contain the essential sap of Tennyson's teaching

on this subject. They contain in the hands of a competent teacher very much more than this. Taken in connection with the succeeding lines supposed to be spoken by the goddess :—

My vigour, wedded to thy blood,
Shall strike within thy pulses, like a God's,
To push thee forward thro' a life of shocks,
Dangers and deeds, until endurance grow
Sinew'd with action, and the full-grown will,
Circled through all experiences, pure law,
Commeasure perfect freedom—

they contain the verdict of history on the ideals of the nineteenth century, as worked out in the public life of this country. A class of pupils of fifteen to seventeen years of age may be led from this passage to understand and to examine for themselves the different meanings of that word "Freedom," which is here said to be commensurate with the pure law of a full-grown will, shrinking from no experience, but which by other masters and in other seasons has been identified with every sort of anarchy and license.

(v.) CONCLUSION.

The aim of all good teaching in dealing with Tennyson should be to bring his poetry into relation with the thought of his age. I have merely suggested here the outline of one particular course which may be filled in by the teacher's independent reading, but the suggestions which I have made follow the lines indicated by the Board of Education in their regulations for the training of teachers, where each alternative literature course is directed to be taken in connection with the corresponding period of social and political history.

In dealing with the contrast between the Arthurian ideal of government and the ideal inherited by Tennyson from Wordsworth and reflected in the history of the nineteenth century in England, the teacher will find his texts in Tennyson's reference to "The red fool-fury of the Seine" in "In Memoriam," in the passage beginning "Thank Him who isled us here" from the "Ode on the Death of the Duke of Wellington," in the conclusion to the dedication of his collected works "To the Queen," in a careful comparison of the two "Locksley Halls," in the three sets of stanzas without any titles beginning respectively, "You ask me why, tho' ill at ease," "Love thou thy land," "Of old sat Freedom on the heights," and in that note which runs so steadily through all Tennyson's productions, by which he distinguishes knowledge from wisdom and bids us count the whole of knowledge as vain if unaccompanied by the salt of wisdom.

For his own reading in connection with Tennyson and the problem of government, the teacher may be referred to the third section of the introduction to Prof. Stopford Brooke's "Tennyson," taken in connection with the criticism offered in the third of this series of articles; to the concluding chapter of Mr. Andrew Lang's "Alfred Tennyson" in Messrs. Blackwood's "Modern

English Writers"; to Lord Tennyson's "Tennyson, a Memoir," *passim*; and to a charming little book recently published by Messrs. Ginn and Co., "An Introduction to the Poems of Tennyson," by Prof. Henry Van Dyke.

THE TRAINING OF SECONDARY-SCHOOL TEACHERS AT THE UNIVERSITIES.

XII.—THE UNIVERSITY OF WALES.

University College of Wales, Aberystwyth.

STUDENTS are prepared in the Secondary Training Department of the University College of Wales, Aberystwyth, for the Teachers' Diploma of the Universities of Wales, London, or Cambridge. The work in the department is post-graduate and the training course covers a period of three terms. This session all the secondary students are women. Practice in teaching is afforded by an intermediate (mixed) school, by primary schools for boys and girls, and by an evening school held in the college, the classes of which are composed of children from the highest standards in the primary schools. The work in the evening school is in algebra, observational geometry, French (mainly the "direct method") and Latin. Attendance at these classes is voluntary on the part of the boys and girls, but the parents, as well as the pupils themselves, consider it a privilege to obtain instruction in this way and the pupils show their appreciation by regular attendance and good behaviour.

Each student in training gives a *minimum* of three hours per week to work in the schools. She is entirely responsible for the teaching of one subject in a certain class throughout the session, and she also takes parts of courses in other subjects. In the chief subject for which the student is responsible she makes her syllabus, sets frequent test papers, which she corrects and marks; she also sets and corrects the home-work, keeps a register of the attendance and a record of the work done by the class, she is responsible for the order during the lesson and for the dismissal of her class. In the subsidiary subjects taught the students usually work in small groups and frame their syllabus after consulting together. They listen to each other's lessons and advise and help one another as much as possible. In a department for both primary and secondary-school students there are many opportunities for the two bodies of students learning much of the aims and methods of those who are preparing for work in another class of school. This interchange of ideas between primary and secondary-school students, and the mutual opportunity of hearing lessons, is helpful to both classes of students and has resulted here in a closer union between the primary and secondary-school students which cannot but be regarded as a happy omen for the future when teaching shall have become an organic profession.

The secondary-school students spend a con-

siderable amount of time each week in teaching exercises and in preparation for lesson-giving. They usually make their own maps and clay-models, and prepare such illustrations as are needed. The graduate finds that such an apparently simple matter as legible blackboard-writing cannot be achieved without pains and that much practice is required to make a blackboard sketch both comprehensive and concise. About two-thirds of the lessons given are carefully supervised and discussed with the individual student—the remaining one-third she gives without being supervised in the class-room, so that she may realise something of her own strength or weakness, and further, that she may have the management of the class under quite natural conditions.

The qualifications and future work of each student are, as far as possible, studied in planning the course of work to be undertaken, and thus from year to year the subjects taught will vary. This session (1904-5) students are taking courses of lessons in Greek, Latin, French, English language and literature, composition, history, geography, nature study (with frequent excursions), arithmetic, algebra, observational geometry and physiography.

University College of North Wales, Bangor.

The course of training for secondary-school teachers, since it covers the requirements for the theoretical and practical examination for the Teachers' Diploma of the University of Wales, is in the main the same as in the other two colleges. There are, however, some differences in detail, chiefly in the practical work arising from differences in local conditions.

So far as possible, the theoretical work is arranged so as to give the students three days a week in the schools throughout the session. The actual teaching is planned so as to enable the students to have sole charge of a form or part of a form for a course or courses of lessons throughout the session. In this way they have the full responsibility for their own division of the class. They mark the exercises done by the children, set and correct examination papers. This arrangement has been found to be more satisfactory than any other, both from the point of view of the students and the school. The students' attitude towards the class becomes more that of the teacher and loses much of the artificiality of set lessons given to a class in whose progress no interest is felt by the student. The student gets to know the children and overcomes difficulties of discipline, and in this way the time of the class is not so likely to be wasted. Divisions of classes taken by students have been found to be on the same level and able to work together with the section taught by a member of the staff of the school at the end of the school year.

In addition to the actual teaching, students are expected to study, under the immediate supervision of the headmaster or headmistress, the organisation of the school, including the arrangement of the time table, the curriculum, classification, arrangement of the staff, the keeping of registers

and records, the library regulations, the organisation of games, and the various other activities which characterise the life of a secondary school.

In this way students have not only an opportunity of becoming familiar with such routine work as dismissing classes, keeping registers, correcting exercises, and conducting terminal examinations, but they also gain considerable insight into the whole working of the school.

Opportunities are also given for visiting schools of different types in the district of Bangor, including primary schools, boarding schools, boys' and girls' schools, and dual schools.

An educational discussion class is a feature of the theoretical work. In it the students have an opportunity of discussing any question of current interest. Wherever possible, specialists in any particular branch of education are invited to lecture to the students on their own branch of the subject, and the students discuss it with them.

University College of South Wales and Monmouthshire, Cardiff.

(1.) DEPARTMENT FOR WOMEN.—This department was opened in 1891 with one graduate student. Its growth was slow, owing to the high standard of academic attainment required from those entering upon the training course. That its growth has, if slow, been steady is shown by the fact that, during last session, seventeen women of graduate standing took the full year's training. Students are prepared for the Cambridge Teachers' Certificate and for the Teachers' Diplomas of Wales and London. In addition to the lectures given by the members of staff, students attend a short course of lectures on psychology, given by the Professor of Philosophy. Special attention is given to the practical training of students in teaching. In Cardiff itself there are excellent schools of all kinds (intermediate, higher grade, elementary, and private), and of these all possible advantage has been taken in arranging not only for courses of lessons and visits of observation, but also for periods of continuous responsibility and practice in teaching. Of late, other intermediate schools of South Wales have opened their doors to students in training, and further developments in this direction are under consideration.

To meet the needs of those students who wish to devote themselves to preparatory or lower secondary school-work a special course of work has been arranged covering about two years. Such students need not be graduates, but must give evidence of a sufficient standard of general education (matriculation and similar certificates are accepted). Mainly for their benefit a demonstration school for children under ten has been established. This school is managed by a committee, and the work is carried on under the direction of the Professor of Education. One of her assistants acts as headmistress, and the school is fully staffed with trained teachers. The students observe and teach in this school under supervision. They are usually prepared for the Higher Certificate of the National Froebel Union. Last session there were six stu-

dents working in this section, making, with those taking the High School Training Course, a total of twenty-three students in the whole department.

(2.) MEN'S DEPARTMENT.—Though a few men teachers had been previously trained in this college by means of special arrangements, the department for men was not formally inaugurated until the opening of the session 1903-4, when it started work with three graduates. The work of the department is so organised as to afford preparation for the Teachers' Diploma of the University of Wales, or for the Cambridge Teachers' Certificate. Students preparing for the former must be graduates of some university in the United Kingdom; those preparing for the latter must either be graduates or be able to produce evidence of a similar standard of attainment. Lectures on psychology are given to those students who have not previously taken a course in that subject; and special arrangements are made for instruction in blackboard drawing and physical exercises when such instruction seems desirable.

In the first term the stress is placed on the theoretical study of education, and upon preparatory practical exercises. The latter consist of vocal training, blackboard drawing, demonstration lessons, written notes of lessons, discussions, and, towards the end of the term, lessons actually given by the students and subsequently criticised. In the second term the stress is placed upon continuous practice in a secondary school chosen for the purpose, though the theoretical studies are continued, and the students come up at stated intervals to have their progress tested. In the third term the whole course is revised, the emphasis being placed upon discussions, in which the students are expected to take a leading part.

A NEW HISTORY OF ROME.¹

WE are glad to welcome a new Roman history on a large plan. For something of this sort Dr. Greenidge had prepared us, not so much by his studies in Roman law as by the excellent collection of authorities which he lately published; but we were not prepared for anything quite so comprehensive. And the book is needed. Mommsen, with all his brilliancy, is not a fair historian, as every scholar knows; and much water has run under the bridges since Mommsen wrote. We do not know whether it is the example of Mommsen's brilliancy, or a reminiscence of Gibbon but for some reason Dr. Greenidge is too conscious of his own style; and that is the chief fault we find with this book. Dr. Greenidge is sententious and over-emphatic; he appears to be ever trying to catch an epigram which wags its tail and flies away.

¹ "A History of Rome." By Dr. A. H. J. Greenidge. Volume I. From the tribunate of Tiberius Gracchus to the second consulship of Marius, B.C. 133-104. With two maps. xii. + 508 pp. (Methuen.) 10s. 6d. net.

The present volume deals with the momentous period of the Gracchan legislation. An admirably clear picture is presented, often in dramatic form, of those stirring times.

Whilst Dr. Greenidge tells a story well, we think that his chief merit is on the constitutional and economic side. His grasp of the facts is very firm and his exposition lucid. We do not remember to have seen the process or the results of the Gracchan legislation so well set forth anywhere. We shall look forward with especial interest to his treatment of Julius Cæsar and Augustus.

The sequence of events is given fully and accurately, the characters are drawn with a firm touch; what can be discovered as to the nature of the reforms and their administration is clearly stated, and what is not known indicated as clearly. It is much to have a clear picture: there lies one primary virtue of the historian, whatever the editors of the "Cambridge Modern History" may think, and there lies also his danger—for the picture may be wrong. We do not feel that Dr. Greenidge has given us quite the true Caius Gracchus; Tiberius is a simpler character, and there is less danger with him. Caius's passion and personal influence are well brought out; his motives do not appear so convincingly. There was something unscrupulous and reckless in Caius; he could stoop also to revenge. He seems to have been more than ambitious, perhaps to have dreamt of power which should be tyranny in all but name. Whilst capable of statesmanlike conceptions, there was nothing he would not sacrifice to win popularity. Probably his motives of loyalty to his brother, and philanthropy, were so mixed with personal motives that he did not know which was which. The latter part of the volume is taken up with the Jugurthian War and the early career of Marius. Here there is less debatable ground. Dr. Greenidge has been fully successful in his account.

EDUCATIONAL ADMINISTRATION IN THE UNITED STATES.¹

THIS, to the "Britisher," amazing volume tells by its title nothing of its contents.

Even the bill of contents scarcely prepares the reader for what the volume is—a fascinating account of, and study in, dry detail. Whatever the headings to the chapters may hint at (*e.g.*, Board of Education, Principalship, the Class Teacher, Getting the Office, Salary and Tenure), the whole work is an examination of the duties of a superintendent of schools. All the nomenclature is American. A board of education means an education committee, a superintendent is a director of education, a principal is a head-

¹ "American Schools: their Administration and Supervision." By W. E. Chancellor, Superintendent of Schools, New Jersey. 1-434 pp. (Health)

master, a janitor is a caretaker, and so forth. There is little, beyond a few eloquent pages, on teaching; but, on business connected with the schools, every chapter is illuminative; and, different as our system is, the book and its valuable "appendices" teach us much.

On the whole, the writer is dissatisfied with education in the States; he wants more money for schools and salaries, more honesty, fewer women teachers, and a better social status for all teachers.

But the amazing part of the book is its frank revelation of dishonesty in education committees. Quotation alone will justify this statement:

In a board that was bought to give a certain contract, the two men who "handled the money" voted publicly against the contract. This was shrewd and safe.

It is a nice question in ethics whether a school superintendent is ever justified in accepting a book-agent's invitation to luncheon or dinner.

The author tells us what he means by a poor or a bad board member:

First, the openly dishonest man. He is often noisy, he owns his ward, defies exposure, threatens his opponent, terrorises the local school principal, takes bribes, grafts, gif knows nothing or affects to know nothing of ethics. He is not common upon "boards of education."

Second, the quietly dishonest man. . . Such a man is very dangerous until he is discovered.

Fourth, the unmoral and the immoral.

Throughout the first hundred pages, *dishonesty in matters educational* is the theme. It is a treat to turn to this, which might have come from Sadi's "Gulistan":

A superintendent coming into his office for afternoon hours found a practising physician, a rich man, and a washerwoman waiting to see him. He called the physician first because of the rights of sick patients. Then he called "Next." The rich man did not rise because he was third; nor did the washerwoman because she was afraid. Seeing the fact, he called her, whereupon the rich man rose and departed. The man of means came again next day and thanked him for his impartiality.

In loco parentis. Chapters on Institution Life and Work. By the Rev. M. G. Vine. 83 pp. (Murray.) 2s. 6d. net.—*Argilla quid vis imitaberis uda* is Mr. Vine's motto; and without one word more he shows us his position. He deals with orphanages, charitable institutions, and certified schools; and Mr. Legge, who is well known for his kindly influence and his hard work as Chief Inspector of Home Office Schools, contributes a preface. There is little that is new in the book; but every page encourages. All is human, kind; and not every one connected with institutions has yet learnt what Mr. Vine so ably preaches, the positive duty of seeing to the physical welfare and the games of all boys in Industrial and Truant Schools. The right note is struck when the author speaks of sympathy, of the attitude of the master, of the formation of old boys' clubs. We have a slight quarrel with the motto quoted above, and should have preferred to see on the first page the words which we quote from the last: "In the mosaics on the floor of Boulogne Cathedral are to be seen in bold letters as one approaches the altar the words, Credo, Spero, Amo."

EXPERIMENTAL GEOGRAPHY.

By A. T. SIMMONS, B.Sc.(Lond.)
Associate of the Royal College of Science, London;
and
HUGH RICHARDSON, M.A.
Bootham School, York.

III.—RAIN AND RAINFALL.

To illustrate further how class-work in geography may be made more interesting and real to young pupils a short series of typical practical exercises on rain and rainfall are here brought together. The work set to be done by members of the class will serve to show how use may be made of observations collected from many parts of the world.

RAIN GAUGE.

The amount of rainfall of a place is measured in terms of the depth in inches to which the land would be covered if no rain sank into the ground, if none was lost by evaporation, and if none ran off. The amount of the rainfall is measured by means of a *rain-gauge*.

(1) Examine a rain-gauge. Notice that there is a funnel for catching the rain and a vessel for receiving it. Is the stem of the funnel bent at the bottom? Why are some bent as in Fig. 1?

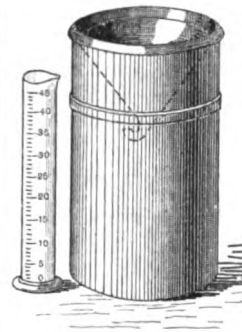


FIG. 1.—A Rain-gauge.

(2) The amount of rain which falls in a day is sometimes very small, and it would be difficult to measure directly the small depth of water which collects in the gauge. How is this difficulty got over?

The size of the measuring-glass is made to have a definite relation to the size of the rain-gauge; and the glass is graduated in terms of the capacity of the rain-gauge. When the measuring-glass is full, the amount of water in it would, if poured into the rain-gauge, stand at a height of half-an-inch in the gauge; or, the full measuring-glass measures half-an-inch (0.5 in.) of rainfall. The measuring-glass is usually graduated to represent tenths and hundredths of an inch of rainfall. If there should on any occasion be more than half-an-inch of rainfall, two measurements must be made with the measuring-glass, and the results added together.

PLOTTING OF RAINFALL STATISTICS.

Where the rainfall is measured daily, it is often found, in this country, that there is an abrupt change in the weather from one day to the next. For this reason it is undesirable to represent the rainfall by a continuous curve, as is used for the barometer observations, which vary continuously from day to day. The rainfall record is discontinuous, and therefore ought not to be represented by a continuous line. It is preferable to use shaded rectangles, the heights of

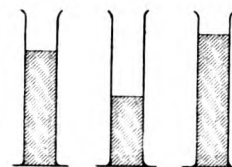


FIG. 2.

which stand for the amount of rain. These may be regarded as simplified pictures of a row of measuring-glasses (Fig. 2).

Daily Rainfall at York, November, 1901.

Day.	Rainfall.	Day.	Rainfall.	Day.	Rainfall.
	Inches.		Inches.		Inches.
1	0'00	11	0'02	21	0'30
2	0'00	12	0'89	22	0'09
3	0'01	13	1'81	23	0'00
4	0'00	14	0'14	24	0'00
5	0'00	15	0'00	25	0'00
6	0'00	16	0'00	26	0'00
7	0'01	17	0'00	27	0'00
8	0'00	18	0'00	28	0'00
9	0'00	19	0'01	29	0'00
10	0'27	20	0'05	30	0'00

(3) Plot by means of shaded rectangles (Fig. 3) the daily rainfall for York for the month of November, 1901.

If the rainfalls for all the days of a month are added together, the *monthly rainfall* of a place is obtained. If the average is taken of the rainfall for corresponding months of a number of years, the *mean monthly rainfall* for that period of time is obtained.

(4) The rainfall at Inverary Castle, Argyll, for each of the months of 1895 was, in inches, as follows:—January, 2'83; February, 1'13; March, 6'40; April, 5'09; May, 1'03; June, 2'64; July, 5'80; August, 11'45; September, 4'53; October, 4'86; November, 9'57; December, 9'98.

What was the rainfall for the year at Inverary Castle?

(5) The January rainfall for each of the years 1899-1902 was, at Wei-Hai-Wei, as shown in the following table. What was the mean monthly rainfall for January for these four years?

January Rainfall, Wei-Hai-Wei, 1899-1902 (Starr).

1899	..	..	..	..	0'14 inches.
1900	..	..	..	..	0'19 "
1901	..	..	..	..	1'68 "
1902	..	..	..	..	0'12 "

July Rainfall at Teddington (Thames) 1893-1902.

Year.	July Rainfall.	Year.	July Rainfall.	Year.	July Rainfall.
	Inches.		Inches.		Inches.
1893	3'03	1897	1'06	1900	1'43
1894	3'54	1898	0'69	1901	2'63
1895	4'04	1899	1'03	1902	1'10
1896	1'05				

(6) From the July rainfalls for the ten years given in the table, calculate the mean monthly rainfall at Teddington for July for the years 1893-1902.

The average of a number of observations of the annual rainfall at a place is called the *mean annual rainfall*.

(7) Calculate the mean annual rainfall of Cirencester for the sixteen years 1887-1902 from the annual rainfalls given in the table.

Annual Rainfall at Cirencester (Hooker).

Year.	Rainfall.	Year.	Rainfall.	Year.	Rainfall.
	Inches.		Inches.		Inches.
1887	21'58	1893	22'50	1898	23'30
1888	31'35	1894	37'85	1899	28'81
1889	26'76	1895	28'07	1900	31'81
1890	23'79	1896	25'65	1901	28'06
1891	37'85	1897	34'27	1902	26'53
1892	24'10				

Mean Annual Rainfall, 1881-1900 (Bayard).

Place.	Rainfall.	Place.	Rainfall.
	Inches.		Inches.
England, N.E.—		England, S. (cont.)—	
Scarborough ..	27'0	Portsmouth ..	26'6
		Ventnor ..	28'1
England, E.—		Weymouth ..	27'1
Hillington ..	27'2		
Lowestoft ..	23'9	England, N.W.—	
		Seathwaite ..	131'0
Midlands—		Macclesfield ..	34'2
Wakefield ..	26'1	Blackpool ..	33'9
Hodsock ..	23'8	Llandudno ..	29'5
Buxton ..	49'2		
Cheadle ..	31'4	England, S.W.—	
Churchstoke ..	30'3	Weston-super-mare ..	28'6
Burghill ..	24'9	Ilfracombe ..	38'3
Apsley Guise ..	23'1	Ashburton ..	50'8
		Sidmouth ..	31'6
England, S.—		Falmouth ..	42'4
London ..	24'6		
Norwood ..	23'8	Ireland—	
Marlborough ..	30'1	Londonderry ..	40'5
Margate ..	23'2	Dublin ..	27'4
Brighton ..	27'9	Killarney ..	56'6

(8) Mark the above places on an outline map of the British Isles. Beside each name write the corresponding rainfall. Draw lines across the map so as to group together all places having rainfall from 20 to 30 inches, 30 to 40, and so on. Shade the areas so obtained according to the amount of rain.

Mean Annual Number of Rainy Days (Rainfall 0'01 inch or more).

Number.	Places.
150—159	Weymouth, Worthing.
160—169	London, Brighton, Portsmouth, Margate.
170—179	Norwood, Lowestoft, Burghill, Harestock.
180—189	Hodsock, Ilfracombe, Cheltenham, Marlborough.
190—199	Blackpool, Hillington, Dublin, Falmouth.
200—209	Buxton, Sealeby.
210—219	Seathwaite.
Above 219	Killarney, Londonderry.

(9) Arrange the places named in the table "Mean Annual Rainfall" in numbered order, from the greatest to the least.

(10) Make a list of the places common to both tables "Mean Annual Rainfall" and "Mean Annual Number of Rainy Days." How can you best decide whether "rainfall" and "rainy days" generally go together?

(11) Find from the table of "Mean Monthly Rainfall" which are the driest months in most places, and which the wettest.

(12) Find from the same table what are the driest place or places for each month of the year.

Mean Monthly Rainfall, 1891-1900 (Bayard).

Month.	Lincoln.	Cheltenham.	Portsmouth.	Falmouth.
	Inches.	Inches.	Inches.	Inches.
January ..	1'88	2'00	2'34	4'21
February ..	1'45	2'02	2'03	3'37
March ..	1'24	1'46	1'68	2'66
April ..	1'48	1'46	1'31	2'38
May ..	1'94	1'74	1'19	1'74
June ..	2'30	1'59	1'63	2'07
July ..	2'18	1'95	2'28	2'28
August ..	2'32	3'06	2'28	3'45
September ..	1'59	1'97	2'54	2'73
October ..	2'34	2'88	3'75	4'02
November ..	1'84	2'42	3'43	4'83
December ..	2'14	2'73	2'80	6'61
Total ..	23'20	25'28	27'26	41'25

(13) Draw diagrams as shown in Fig. 3 for Lincoln, showing the variation in the amount of rainfall throughout the year at Lincoln, Cheltenham, Portsmouth and Falmouth. Do you find

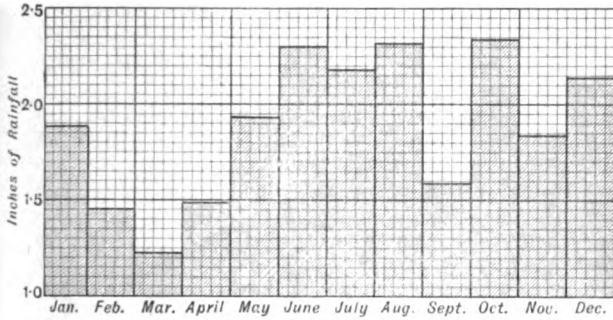


FIG. 3.—Diagram to show variation in amount of rainfall throughout the year at Lincoln.

that one month is always the wettest at every place? Similarly is there the smallest rainfall in all places in the same month?

RAINFALL MAPS.

(14) Examine Fig. 4, which is a rainfall map of the British Isles. Notice that a table of the styles of shading to indicate varying amount of rainfalls is supplied. On which side of the

Islands is the rainfall greater? How are the mountains of Great Britain arranged? Where is the rainfall greater? where the country is hilly or flat?

(15) The prevailing winds in the British Islands are south-west. Remembering whence these winds come, try to account for the greater rainfall as shown in the map.

(16) Write a list of six important places in England where the mean annual rainfall is less than thirty inches. Find similar places in Scotland and Ireland.

(17) Name six districts where the mean annual rainfall is more than seventy-five inches.

(18) Which is the wettest part of Ireland, and which the driest?

(19) Use tracing paper ruled in squares to find the relative areas of the different shades in the rainfall map of the British Isles. Hence calculate the average rainfall for England, Scotland, and Ireland.

Mean Annual Rainfall, 1891-1900 (Bayard).

Place.	Rainfall.	Place.	Rainfall.
	Inches.		Inches.
Scarborough	26'53	London (Regent's Park)	23'97
Lincoln	23'20	Tunbridge Wells	30'20
Lowestoft	23'64	Brighton	27'04
Chelmsford	21'64	Seathwaite	133'05
Wakefield	25'62	Bolton	41'56
Buxton	49'03	Princetown (Devon)	73'78
Cheltenham	25'28	Falmouth	41'25

(20) Mark the places given in the above table on an outline map and write the amount of rainfall against each name. Compare these numbers with the shading values in Fig. 14. Are most of the places with a low rainfall on the east or west of England?

RAINFALL AND ALTITUDE.

Mean Annual Rainfall, 1881-1890.

Grouped according to Altitude for 147 Western and 162 Eastern places in England (Marriott).

Altitude.	Western Places.	Eastern Places.
Feet.	Rainfall in inches.	Rainfall in inches.
1—50	32'79	24'36
51—100	33'59	25'39
101—150	35'46	25'76
151—200	36'28	26'14
201—250	36'50	26'35
251—300	35'36	28'41
301—350	41'05	28'30
351—400	35'10	28'75
401—450	56'26	27'73
451—500	—	—
501—550	41'00	32'54
551—600	38'08	35'84
601—700	41'25	35'27
701—800	58'83	45'12
801—900	55'01	—
901—1000	59'54	49'33

(21) Examine the numbers in the above table showing the amount of rainfall at places of different heights above the sea-level. Where is the greatest rainfall? At places near the sea-level or those of some altitude? Is this more noticeable for places on the east or on the west?

Rainfall at Different Altitudes in Central Germany (Hann).

Altitude (feet)	330—660	660—990	990—1320	1320—1650	1650—2300	2300—3300
Rainfall (inches)	22'84	25'59	27'56	30'71	33'46	39'37



FIG. 4.—Map of British Rainfall, prepared by Dr. H. R. Mill, director of the British Rainfall Organisation. [From Huxley's "Physiography" (revised edition).]

(22) Compare the number of inches of rainfall with the height in feet above the sea-level in Central Germany and write down a rule connecting rainfall and altitude.

The increase of rainfall with height above the sea-level does not hold good in the same regular manner for places of more than 1,000 feet above the sea.

RAINFALL AND FLOOD.

The following table gives interesting particulars as to the rainfall at York, and the level of the River Ouse at the same place on each day of the month of November, 1901. It will be useful to try to find some connection between the amount of rainfall and the height of the river. The following exercises suggest one way of doing this:—

(23) Using the method of Ex. 13, represent, by shading on squared paper, the rainfall at York for November, 1901, as

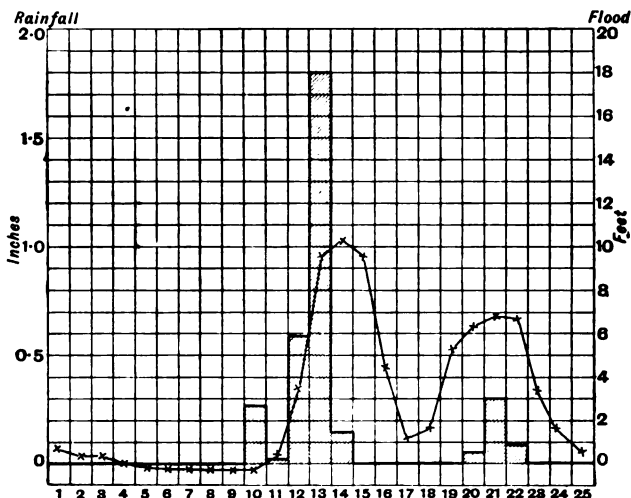


FIG. 5.—Diagram to show the connection between the amount of rainfall at York and the height of the river Ouse.

given in the table. Make vertical heights in the diagram proportional to the rainfall (Fig. 5.). Remember that a smooth line must not be drawn connecting the tops of the shaded areas, because the rainfall is an interrupted quantity.

(24) Plot on the same sheet the height of the River Ouse given in the table. A curve can be drawn connecting the points set down for the heights, because the varying level of the river is a continuous quantity.

York, November, 1901.

Date.	Rainfall.	Level of River Ouse, above or below summer level.	Date.	Rainfall.	Level of River Ouse, above or below summer level.
1	Inches. 0'00	Above Ft. ins. 8	16	Inches. 0'00	Above 4 3
2	0'00	" 0 4	17	0'00	" 1 2
3	0'01	" 0 4	18	0'00	" 1 8
4	0'00	Summer level	19	0'01	" 5 3
5	0'00	Below 0 1	20	0'05	" 6 3
6	0'00	" 0 2	21	0'30	" 6 10
7	0'01	" 0 3	22	2'09	" 6 8
8	0'00	" 0 3	23	0'00	" 3 4
9	0'00	" 0 3	24	0'00	" 1 6
10	0'27	Above 0 3	25	0'00	" 0 9
11	0'02	" 0 3	26	0'00	" 0 9
12	0'59	" 3 6	27	0'00	" 0 7
13	1'81	" 9 6	28	0'00	" 0 6
14	0'14	" 10 4	29	0'00	" 0 7
15	0'00	" 9 6	30	0'00	" 0 8

ADDITIONAL EXERCISES FOR INDIVIDUAL OBSERVATION.

- (25) Is the rainfall heaviest on the hill-tops or in the valleys of your neighbourhood?
- (26) Use your rain-gauge to measure the daily smut-fall.
- (27) Collect sample of rain-water from a fall-pipe at the beginning, middle, and end of a shower. Are they equally black?
- (28) Experiment with flour, lycopodium, or other fine powders to find how fast they fall through dry air. Use a microscope to measure the diameter of the particles.
- (29) Draw the shapes of water-drops as they form at a dripping tap.
- (30) Are water-drops all of the same size? Try how much 100 drops lower the level of water in a burette, and how much 100 drops from a water-tap raise the level in a measuring jar.
- (31) Invent some plan for measuring the sizes of raindrops.
- (32) Experiment in dry weather with a garden watering-can (of known capacity in gallons) and a flower-bed (of known area in square yards). To what depth in the soil will one gallon per square yard penetrate? How many gallons per square yard must be applied before the soil is saturated? To what depth in hundredths of an inch does one gallon per square yard correspond?
- (33) Under what conditions does a raindrop hanging from a leaf appear to change its colour? ["first a torch and then an emerald."—*Ruskin.*]
- (34) What arrangements are made to prevent loss or damage by flood or drought in your district?
- (35) How long after a thunderstorm do your rivers reach their maximum height, and how soon does the flood run down?

THE EDUCATION OF INTENDING PUPIL TEACHERS.¹

By the REV. E. F. M. MACCARTHY, M.A.

Headmaster of King Edward's Grammar School, Five Ways, Birmingham.

I AM asking the attention of the Association to the education of *intending*, not of actual, pupil teachers—*i.e.* of boys and girls under and up to sixteen years of age, who intend at the termination of their ordinary school career at this age to obtain their further education combined with professional training in "pupil teachers' centres" either attached to, or associated with, or wholly separate from, the schools of their previous education.

Intending pupil teachers may be drawn from two sources:—

(1) Boys and girls from public elementary schools who have obtained scholarships tenable at secondary schools (at twelve years of age or thereabouts), the award of which has been made either—

(a) Subject to the condition of their intending apprenticeship as pupil teachers at sixteen years of age in public elementary schools, or

(b) Free from any such condition.

(2) Boys and girls who have entered the secondary schools in the ordinary way at the ages of nine and upwards, having had their earlier education at home or in preparatory schools.

The purpose of my resolution is to advocate the tapping of the *ordinary* supply of secondary-school pupils whatever may have been the source from which they came—whether from public elementary schools or preparatory schools or from home

¹ A paper read at the Annual Meeting of the Incorporated Association of Headmasters.

tuition—and in this way to supply the public elementary schools with a certain number of teachers who, whether their social status is working class or middle class, have had the benefit of from four to six years of secondary education.

I would say here in passing that I am strongly opposed to the scheme, which finds favour with some local authorities, of selecting the intending pupil teachers at the immature age of twelve with a view to pupil teachership at sixteen; for, besides the inherent difficulty of making a suitable selection at this early age, the scheme will prove extremely wasteful in practice owing to the inevitable heavy leakage of those who are eventually discovered to be unwilling, or unfit, for a teacher's work. Instead of local authorities ear-marking children as intending pupil teachers at the early age of twelve, I would urge that the selection should not take place until they are fourteen years of age, and that scholarships or bursaries should not be offered until this later age. The purpose would thereby be fulfilled of enabling those who showed satisfactory attainments and qualifications for pupil teachership to tide over the period from fourteen to sixteen years—the very time when the counter attraction of money-earning in business avocations would begin to be seriously felt.

Now let me say at the outset that a glance at the statistics of the question is sufficient to show that the endowed secondary schools are far too few in number, and are many of them too inconveniently placed, to be able to supply the preliminary education for *anything like all* the boys and girls who will be needed to meet the requirements of the country for teachers in elementary schools.

The secondary-school education of such must be largely the task of the secondary schools (formerly called "higher grade") and the "preparatory classes" which have been, or will be, established by the education committees of local authorities under the Education Act, 1902. But, as against the local authorities who think that they can do *all* this work, as well as against endowed school authorities who think they can do little or *none* of it, my contention is that the latter can do a good deal of it, and ought in the highest interests of the nation to *do as much as possible*.

It must be borne in mind that the amount of correlation of local authorities and endowed-school governors in the work of secondary education of every type, for all who may reasonably expect to be supplied with it, has been left by the Education Act, 1902, to be determined rather by concordat than by enactment. In any locality where the funds of the local endowment are obviously inadequate for the purpose unless supplemented by rates (raised by the authority) as well as Government grants (administered by the authority), the endowed schools will inevitably, sooner or later, be merged into, and form part of, the local authority's educational machinery. But where the endowment is fairly adequate, and needs only Government grants, but not rates, to supplement its resources, or where there is no need at all of public aid even in the form of Government grants, the governors of endowed secondary schools will be able to maintain a large amount of independence of local authority jurisdiction. In the latter cases there is danger of their doing this at the risk of being ignored altogether by the local authority when it sets up its machinery for the education of intending pupil teachers. It is devoutly to be hoped that this danger will not arise.

Again, the situation is critical where the local authorities, however enlightened in their treatment of the problems of elementary education, may not be so enlightened as regards those of secondary education as to see any substantial difference between secondary education of the type which they would give as a continuation of an elementary school course and the secondary education of the traditional type of the ancient grammar-schools,

which has been the growth of centuries; nay, may go so far as to maintain that, if there is any difference, it is in favour of their own secondary schools.

The principle of the secondary school is individualism, the training of the individual, as opposed to collectivism, the instruction of the class. Now this *ἦθος*—this ethical spirit—has been infused into the endowed secondary schools in English towns through inoculation (so to speak) from the great public schools and the universities. This has come about through the selection, as headmasters, of men who have been subject to these influences and saturated with these traditions, and who have, in some cases for two or three centuries past, been appointed by governing bodies to the headmasterships of these town grammar-schools. These headmasters, in their turn, having been given a *free hand* by the governors—this also being a part of the traditional policy for endowed schools—have appointed as assistants a considerable number who have also acquired these traditional character-building instincts.

On the other hand, the head teachers of the modern Council secondary schools will be appointed by the Council education committees composed of men who, as far as they possess educational instincts, derive them from their experience on the defunct school boards which dealt only with elementary education. These head teachers will, almost naturally, go to successful elementary school teachers. The same will happen with the assistantships, which also will be filled up by the Education Committee. The Council secondary school is what *the Education Committee* makes it. The endowed secondary school is what the *Headmaster* makes it.

Let us see how this bears upon the education of intending pupil teachers.

It has now been definitely laid down by the Board of Education that the preliminary education of the intending pupil teacher up to apprenticeship at sixteen should be carried on in a secondary school. In which type of secondary school can this education be best given, in the interests of that wider culture, that greater breadth of view, that manlier character-building, all of which elementary education in this country so urgently needs—in the Council secondary school with its elementary education traditions, or in the endowed school with its secondary traditions?

Let me give one or two illustrations (out of many which could be given) of the working of these traditional forces. Take the matter of "sneaking." In an elementary school a teacher, wishing to discover an unknown misdemeanant, asks the class, "Who did that?" and the answer comes promptly from all the class *except* the culprit Jones, "Please, sir, Jones did it." In a secondary school, under similar circumstances, every member of the class would bite his tongue out sooner than inform on the culprit, and, if the question gets answered at all, it is by Jones himself saying, "I did it."

From my long intimacy with the working of elementary schools as a member of the Birmingham School Board, and a large experience of elementary school pupils passed on to my secondary school on King Edward's Foundation, Birmingham, this characteristic difference between the atmospheres of elementary and secondary schools has forced itself upon my attention:—that the sense of comradeship and of loyalty to one's schoolfellows—the *social compact* between schoolmates, which is based upon the feeling that mutual trust is the foundation of the peace and comfort of their social order, and which accordingly pronounces a sentence of ignominy upon the informer and the sneak—is almost entirely absent from the code of honour of an elementary schoolboy.

The explanation may be that the struggle for existence in its severer forms is intense enough to generate an instinct of mutual distrust—the feeling that everyone must fight for his own hand, and *occupet extremum scabies*; with the result that the elemen-

tary school child is furtively on the defensive against his classmates, ever uneasily wondering whether some misfortune may not presently come to him from one of his neighbours. But, whether this is the true explanation or not, undoubtedly this article in the secondary schoolboy's code, "Thou shalt not get thy neighbour into a row," is very little known in elementary schools; and yet we secondary schoolmasters know it to be the foundation of that loyalty to one's associates, and of that consideration for others, which train the boy to be a man of honour.

It will be an enormous moral and social gain if youths, who have come under this influence until it has made a lasting impression, should find their way into the ranks of teachers in elementary schools.

Take, again, the matter of *discipline*. Those acquainted with the working of elementary schools must be painfully impressed with the intense rigidity of the discipline—very largely necessary, no doubt, for teachers who have to deal with such large numbers and with such rough elements. Some relief from the cast-iron, mechanical nature of that discipline may be looked for under better conditions (which we hope are approaching) of smaller classes and greater civilisation of the home surroundings of the children. How much help towards this improvement may we not look for from a leaven of teachers who have been trained under conditions encouraging greater individuality, with less restraint at every turn, and where the tone has been not so much that of "do because you are told," but rather "do because you ought."

Finally, let us not forget this: that the movement for the secondary education of intending pupil teachers dates from "the Report of the Departmental Committee of the Board of Education on the Pupil Teacher System," which, appearing in 1898, *i.e.* four years before the date of the Cockerton judgment, converted the higher-grade schools of the School Boards into secondary schools. In those days, therefore, the endowed secondary schools (and a few other public and private secondary schools, which for the purpose of my argument may be considered to be included in that term) were the *only* schools present to the minds of the Departmental Committee.

To sum up the benefits which will accrue to elementary education by making the career of pupil teacher easily accessible to the ordinary scholars of endowed secondary schools:—

- (1) It will introduce into that area of national education those old and well-tried standards of culture and humane aim which have become traditional in the secondary area;
- (2) The virtues of fair play and consideration for others will be more fully developed in elementary schools;
- (3) Spontaneous, rather than enforced, obedience will be more general;
- (4) Discipline will be less rigid;
- (5) Freer and more formative methods of instruction will more widely prevail;
- (6) The value to the individual scholar of independent study, in the form of home-work and unassisted preparation of lessons, will be more clearly recognised; and, lastly,
- (7) The larger interfusion and closer co-operation between secondary schools and elementary schools will create a firmer bond of union between the two parts of the teaching profession, and tend to dissipate that lurking prejudice among teachers in elementary schools against those who enter their ranks from secondary schools—a prejudice which now, unfortunately, serves to accentuate the separation of the two parts, and so to postpone the day of that complete union of the teaching profession for which the full development of national education in England impatiently waits.

THE USE OF CALCIUM IN LECTURE-TABLE EXPERIMENTS.

PROF. A. SENIER and Miss R. Clarke contribute to the *Chemical News* of February 24th a short article on the use of calcium in lecture-table experiments. Science is indebted, they say, to a recent development of German industry for a source of calcium from which this metal may now be obtained in quantities of a pound or more, and at a comparatively trifling cost. It is produced by electrolysis in the form of rough cylindrical sticks weighing about a pound each. In colour it is white, like aluminium, and it has about the same degree of hardness as ordinary brass. It is easily turned in a lathe, and the turnings, which may be allowed to fall into light petroleum, are a convenient form in which to employ it. The commercial metal contains 98 per cent. of calcium.

Preparation of Hydrogen from Water.—When wrapped in iron gauze and introduced into a pneumatic trough containing water, in the usual way, hydrogen is evolved quietly, and may be collected readily in any desired quantity. At the same time the water of the trough becomes turbid owing to floating particles of calcium hydroxide. The reaction is so much more moderate and more easily controlled than that with sodium and water, that it is suggested that in schools it be substituted for the latter. Moreover, it is an additional advantage that both products of the reaction, the gas and the solid hydroxide, are observed at once.

Synthesis of Calcium Compounds: Oxide, Chloride, Sulphide, Phosphide.—Calcium turnings are placed in the bulb of a hard-glass tube, with a central bulb, in the case of the oxide and chloride experiments. In those of the sulphide and phosphide, tubes with two bulbs are employed, and the second bulb is charged with sulphur and phosphorus respectively, and the end next to it closed with a cork. In every case the metal is first heated to low redness, and then the dried gas is led over it, or the solid is distilled over it. The oxide, sulphide, and chloride form at once with brilliant incandescence, but the phosphide is obtained only in small proportions. The light emitted in the oxide and sulphide synthesis affects a photographic plate to about the same extent as the burning of the same quantity of magnesium.

Other Applications.—Calcium, burning in air, and then plunged into carbon dioxide, like magnesium, removes the oxygen and liberates carbon. Calcium heated to redness appears to have no action on dried ammonia gas.

Calcium metal can be obtained from Messrs. Armbricht, Nelson & Co., 71 and 73, Duke Street, Grosvenor Square, W., at 1s. 6d. the ounce.

OXFORD LOCAL EXAMINATIONS. SET SUBJECTS FOR 1906.

Preliminary.

Religious Knowledge.—(a) Old Testament History (from the descent of Jacob into Egypt to the election of Saul), (b) St. Luke (chap. vi. to end), (c) Acts (chap. xvii. end), (d) Church Catechism.

English History.—Either the Outlines from 1066 to 1399, or the Outlines from 1399-1603, or the Outlines from 1603 to 1714, or the Outlines from 1714-1815, or the Outlines from 1815-1871.

English Author.—Either Scott's "Lay of the Last Minstrel," or "Poems of English Country Life" by George and Hadow (Clarendon Press), or Keary's "Heroes of Asgard" (Macmillan), or Macaulay's "Horatius and Lake Regillus."

Geography.—General knowledge of (a) England and Wales, or (b) Scotland and Ireland, or (c) India.

Elementary Latin.—"Nepos, Selected Lives," by J. B. Allen (Clarendon Press).

Elementary Greek.—Sidgwick's "First Greek Reading Book," Exx. 1-50 (Rivington).

Elementary French.—De Musset's "Pierre et Camille" (Hachette).

Elementary German.—"Kinderfreuden" (Clarendon Press).

Junior.

Religious Knowledge.—(I.) Either (a) see Preliminary; or (b) St. Luke; or (c) Acts xiii.-xxviii.; or (d) Prayer Book.

English Literature.—(a) Either Shakespeare's "Henry V." or "Macbeth," or Scott's "Lay of the Last Minstrel"; or (b) Shakespeare's "Tempest"; or (c) "Poems of English Country Life," by George and Hadow (Clarendon Press).

History.—Either (a) Outlines of Greek History from 445 to 343 B.C.; or (b) Outlines of English History from 1066-1399, with special questions on the Reign of Edward III.; or (c) Outlines of English History from 1399-1603, with special questions on the House of Lancaster; or (d) the Outlines of English History from 1603-1714, with special questions on 1685-1702; or (e) the Outlines of English History from 1714-1815, with special questions on the Industrial Revolution; or (f) Outlines of English History from 1815-1871, with special questions on Indian History from 1837-1860; or (g) Outlines of General European History from 1095-1254.

Geography.—General: (1) Geographical Principles, (2) British Isles, (3) one of (a) Mediterranean region, (b) Monsoon region of Asia, (c) Atlantic region of North America.

Latin.—Cæsar, De Bello Gallico II.; Virgil, Aeneid I.

Greek.—Xenophon, Anabasis II.; Euripides, Alcestis.

French.—Either "Bug Jargal," by Victor Hugo, or "Le Tour du monde en quatre-vingts jours," by J. Verne.

German.—"Der stumme Ratsherr," "Der Dachs auf Lichtmess," "Der Leibmedikus (Kulturgeschichtliche Novellen), by Riehl.

Senior.

Religious Knowledge.—(a) Old Testament History (from the descent of Jacob into Egypt to the Election of Saul); (b) St. Luke; (c) St. Luke in Greek; (d) Acts; (e) The Church Catechism, Morning and Evening Services, the Litany, and the Outlines of the History of the Prayer Book.

English Literature.—Either: (a) Shakespeare's "Henry V."; (b) Burke's "Thoughts on the Present Discontents" and "Speech on Conciliation"; or Spenser's "Faery Queene" Canto I. Either: (a) Shakespeare's "Tempest"; or (b) Keats's "Odes" and Shelley's "Adonais." Either (a) More's "Utopia," or (b) Tennyson's "Gareth and Lynette," "Geraint and Enid," "Holy Grail," "Passing of Arthur."

History.—(a) Outlines of Greek History from 445 to 323 B.C., with special questions on the Peloponnesian War; (b) English History (i.) 1066-1399, (ii.) 1399-1603, (iii.) 1603-1714, (iv.) 1714-1815, (v.) 1815-1871; (c) Outlines of general European History from 1095-1254.

Geography.—(i.) Principles of Geography, (ii.) British Empire, (iii.) one of (a) Europe, (b) Asia, (c) North America (including West Indies).

Latin.—Either: (a) Cierco, Philippics III., V., VII., or (b) Cæsar De Bello Gallico, Books I.-III.; and also either (a) Horace, Odes, Book I., or (b) Virgil, Aeneid I.

Greek.—Either: (a) Demosthenes, Olynthiacs I., II., or (b) Xenophon, Anabasis II., III.; and also either (a) Aeschylus Persae, or (b) Euripides, Alcestis.

HISTORY AND CURRENT EVENTS.

"THE announcement that the Dominion Government will take over from the British authorities on July 1st next the defences of Halifax and Esquimalt has been received with mingled feelings. Many ardent advocates of the Imperial connexion would have preferred that British Regulars should not be entirely withdrawn from Canadian soil. The responsibility for this step evidently rests with the Dominion Government. It is said that the British authorities proposed that Canada should pay £250,000 sterling towards the cost of maintaining the defences, and should leave the control in the hands of the British Government. Canada, on the other hand, held to the offer made at the Colonial Conference that she should assume full control and pay the entire cost." The whole incident reminds us of that historic quarrel which finally partitioned the British Empire in 1783. With what heat, even to civil and foreign war, and to separation with hatred, did that discussion lead! With what cool, business-like quietness are the questions discussed now! What are the reasons for the difference?

IN the course of the inquiry into the North Sea incident of last October, the British Government desired to press upon the Commission the assurances given by certain States that no torpedo boats of theirs were in the North Sea on that famous occasion. It is worth noting that the States thus quoted were France, Germany, Denmark, Holland, Sweden-Norway, and Japan. The last was included for obvious reasons. The others are the Atlantic Powers with three exceptions, viz., Spain, Portugal, and Belgium. It is interesting to reflect on the reasons for the inclusions and the exclusions. It would also be useful to compare this list with the list that one would make of European Atlantic Powers for the purpose of considering the expansion of Europe westward that took place in the sixteenth and seventeenth centuries. Then the list would have been Spain (including Belgium and, for a long time, Holland), Portugal, France, Denmark-Norway, and Sweden. All these have had colonies in America. Where are those old colonial empires now? Why was not Germany then one of the colonising Powers?

THE King of Prussia dedicated in the end of last February, in the presence of the members of his house and representatives of the Sovereigns and Churches of all the Protestant States of Europe, the newly finished cathedral (Dom) at Berlin. "Over the eight giant pillars which support the central portion of the edifice are the statues of the reformers, Luther, Zwingli, Calvin, and Melancthon, and of the four German sovereigns who promoted the Reformation, Duke Albrecht of Prussia, the Elector Joachim II. of Brandenburg, the Elector Frederick the Wise of Saxony, and the Landgrave Philip the Magnanimous of Hesse." We wonder what the four theologians would have thought in their lifetime if they could have contemplated this eirenicon. Melancthon, we suppose, is the only one of the four who might possibly have approved, and it would be a useful exercise if our readers have access to a good historical map, to identify the territories of the four princes, to verify their titles, and to learn from some good history of those times, the part they respectively played in the religious politics of their day.

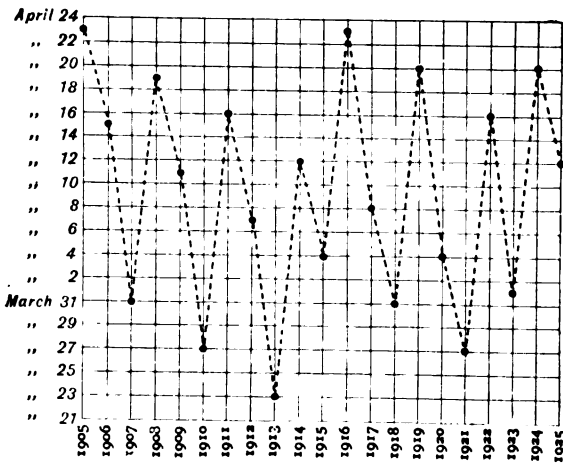
THERE has for some years been soreness between Sweden and Norway as to commercial matters, specially as to the appointment of consular agents abroad. Norway wants to have a consular service of her own as distinct from that of the sister Kingdom. The Crown Prince, who is just now acting as Regent of Norway for his father, has been pleading with the Norwegians for reasonableness in the agitation, "regretting the

present situation" and pointing to the "great dangers involved in disruption." How different all this is from the condition of affairs, even from the ways of thinking, a hundred years ago. In the closing years of Napoleonic rule, Russia was to have Finland at the cost of Sweden, and Bernadotte of Sweden was to be compensated for the loss of Finland, by the conquest of Norway at the cost of Denmark which had too long remained faithful to Napoleon to please the diplomatists of Europe assembled at Vienna. There was no thought there and then for the wishes of peoples. Now we are all sympathising with Finland, and the rulers of Sweden-Norway are anxious to soothe the popular jealousies of the two Scandinavian folk. Yet the revolution has been "without observation."

ITEMS OF INTEREST.

GENERAL.

THE date of Easter is of interest to schoolmasters, because it has sometimes to be considered in determining the length of the school term. According to the Prayer Book rule, Easter-day is always the first Sunday after the full moon which happens upon or next after March 21st, and if full moon happens upon a Sunday, Easter-day is the Sunday after. As the moon was full this year in the early morning of March 21st, it would appear that Easter-day should have been Sunday, March 26th, whereas the Calendar gives the date as April 23rd. The reason is that the ecclesiastical or paschal full moon is not the actual moon in the sky but a fictitious moon, the changes of which are arranged so as not to differ much from those of our satellite. Dr. A. M. W. Downing, the director of H.M. *Nautical Almanac* Office, has recently explained that the changes of the paschal moon are arranged to hold good for all longitudes,



Graphic Representation of the date of Easter year by year for twenty years.

in order to avoid a practical inconvenience that would arise from the use of the actual moon. For instance, though the moon was full on March 21st, at 4.56 Greenwich mean time, the same moon was full at 11.48 p.m. on March 20th, Washington mean time. Hence, if the actual time of full moon were taken to regulate the date of Easter-day, people using Greenwich time would have kept it this year on March 26th, while those adopting Washington time would keep it on April 23rd. The variation of the date of Easter year by year for twenty years is represented graphically in the accompanying diagram. It will be noticed that after this year Easter-day will not fall as late as

April 23rd until 1916, and that the earliest date on which Easter-day occurs is March 23rd, in 1913.

WE are sorry to hear that the War Office has determined to drop modern languages at the Staff College, on April 1st. This may be caused by the inability to find a suitable successor to Prof. Deshumbert, who was appointed by Lord Wolseley, and resigned in 1902. We presume the War Office trusted to private recommendations, instead of advertising the vacancy and securing a committee of practical teachers to judge the candidates. We recollect that the Modern Language Association petitioned the War Office two years ago against the proposal of abolishing the teaching of French and German at Sandhurst and Woolwich. Whether their representations had any effect or not, those languages are still taught there. Considering the poor display made by our officers in China, and the increase in international dealings, one would think the War Office would increase the facilities for modern language study instead of decreasing what few there are. The Admiralty are proceeding on entirely different lines; we gave an abstract of their new regulations in our issue of August last.

M. EMILE FAGUET, who was commissioned by the Academy to draw up a report on the spelling reforms proposed by the French Education Council and laid before the Academy, is said to have hinted that few of the suggestions have found favour with the "Forty." It appears that they have agreed to tolerate the spellings of: chous (and its six comrades), of aglomérer, etc., with one s, of confidenciel, of rapsodie, of emmener, and of fond (in all meanings, singular). The total number of words that such changes concern is only about fifty, so the projects of the phonetic spellers have fallen to the ground. It is believed that the Minister will accept the decision of the "Académie," even though it does not agree with his personal wishes. In the matter of language, however, the Immortals reign supreme; no one can appeal against their verdict. The question will be settled so soon as the official rescript is issued to the school authorities throughout France; till then all forecasts are necessarily likely to be erroneous.

It has already been announced that both the Oxford and Cambridge Schools Examination Board and the Local Examination Boards of the two Universities have inaugurated schemes for school or "leaving" certificates. The University of Oxford has decided to grant exemptions from Responsions on certain conditions to the holder of a Joint Board School Certificate, or of a Senior School Certificate granted by the Oxford Delegates of Local Examinations. For such exemption a candidate must have passed either in the same year or in separate examinations in English, Latin, Greek, mathematics, and a branch of natural science.

AN addition has been made to the list of optional subjects for the matriculation examination of the University of London. The new subject, "History and Geography," is a composite one, and is in addition to the existing ancient history, modern history, and physical and general geography. Candidates who take the combined paper in history and geography will not be allowed to take either the modern history paper or the paper on physical and general geography. The first paper on the new subject will be set in the examination of next June.

GREEK is to continue a compulsory subject for the Little-go at Cambridge. The Senate of the University has rejected the recommendations of the Syndicate on Studies and Examinations, three out of every five voting against the proposals. The poll taken was the largest on record, and in the case of the voting on the Greek question the "non-placets" were 1,559 and the "placets" 1,052. This result will not decide the question

finally, and already discussions are taking place as to the best steps to take to modernise and rationalise the entrance requirements at the older Universities.

SIR JOHN GORST and Dr. Macnamara have on recent occasions addressed questions to members of the Government with a view to determine what steps are being taken to carry out the recommendations of the Physical Deterioration Committee. Dr. Macnamara elicited the information from the Home Secretary that he does not see his way clear to introduce any Bill during the present session to prohibit the sale of tobacco and cigarettes to young children, and from Sir William Anson that the Government had no intention of introducing legislation extending the powers of local authorities to enable them to deal with the question of underfed children. Sir John Gorst was informed by the Home Secretary that the recommendations of the Committee will not be lost sight of, and that the subject of defective children is under the consideration of a Royal Commission, and by the President of the Local Government Board that a committee appointed after consultation with the Home Secretary is inquiring into the question of vagrancy.

LORD LONDONDERRY, replying to a deputation representing the West Riding County Council and the education authorities of the county boroughs of the West Riding, with reference to the cost of training pupil-teachers in secondary schools, said as a ratepayer he sympathised with the views that had been expressed. The deputation, he continued, represented that the grants at present provided towards the maintenance of secondary schools do not bear a sufficient proportion to the cost of maintaining them. It has been calculated that the cost of running a secondary school is between £12 and £16 per head a year. The Exchequer grant only applies to pupils between the ages of twelve and sixteen, and ranges from £2 to £5 per head. If it were possible to provide a larger grant for these schools no one would be more pleased than the Board of Education. Notwithstanding this, Lord Londonderry doubted whether there was the slightest chance of being able to meet the request for increased grants from the Imperial Exchequer. The deputation said the grants for pupil-teacher centres are insufficient. The Board is now making a grant of £7 to each pupil teacher who receives instruction in a centre. In two years this grant amounts to £14, and when, said Lord Londonderry, this is compared with the old system the aid given shows a material increase. Lord Londonderry did not agree that the grants now made in respect of training colleges are inadequate. The deputation asked what assistance the State is to give in the shape of building grants for the establishment of training colleges. The Government is pledged to the principle that such grants must be made, and the President of the Board of Education said he is in constant communication with the Chancellor of the Exchequer with regard to the settlement of the details of the basis upon which these grants are to be made.

IN one of a series of lectures Sir Oliver Lodge has been delivering to teachers in Birmingham he dealt with the subject of school reform. External examinations he condemned as hampering to the teacher. The proper function of the teacher—the drawing out and development of the mind committed to his care—is apt to be neglected in view of the direction of his attention to an artificial end. If, said Sir Oliver, the stimulus of learning can be found in the subjects themselves without adventitious and competitive inducements, it will be more wholesome for teacher and taught. The danger of slackness must not be overlooked, however, and some external test and outside criticism is desirable to prevent the standard of aim or industry going down.

THE Senate of the University of London has made arrangements for opening the training college at the Goldsmiths' College, New Cross, S.E., in September next, and it will be carried on under the regulations of the Board of Education as a college providing a two years' course for men and women students who have passed a King's scholarship or other equivalent examination. The management of the college will be entrusted to a delegacy, on which the London County Council, as well as the councils of neighbouring counties and county boroughs, will be represented. The college will be entirely unsectarian in character. The college will probably be recognised by the Board of Education as providing accommodation for 500 students, although it is possible that it may be restricted to 400. Applications for 540 places have been received from various councils, and, as this number is in excess of the maximum accommodation, the number to be assigned to each council will be reduced *pro rata*. The Senate has agreed to reserve for the London County Council during the session 1905-6 places for either ninety-three or seventy-four students, according to the total number recognised, provided that the Council undertakes to pay to the University a sum calculated at £16 a head for each student—viz., £1,488 or £1,184, as the case may be, together with a contribution towards the initial maintenance expenses. The Council has approved the proposals of the Senate.

IT is proposed to hold at the Horticultural College, Swanley, Kent, again this summer, a holiday course for teachers in nature-study on the same lines as the one held there during the first fortnight of August, 1904, which was attended by nearly sixty schoolmistresses. Full particulars can be obtained on application to the Principal of the college.

THE annual meeting and conference of the Private Schools Association (Incorporated) was held on March 3rd and 4th at the College of Preceptors. The report states that the past year has been a time of anxiety to principals of private schools. The membership of the association is 1,360. A large number of the schools have such a precarious existence, owing to the action of local education authorities, that the payment of an annual guinea subscription has become a matter for serious consideration. Sir Henry Kimber, M.P., the new president, said in the course of his address that the private schools of this country have done splendid service in the cause of education, and are much underrated, and have not received the recognition from the Legislature to which they are entitled. He recommended importunity. The association should, he said, sit at the doors of the Board of Education and of the local education authorities till they not only listened but acted. It should also petition. The proposed college of secondary teachers was discussed, and addresses were delivered on "Private Schools and Local Education Authorities" and "Private Schools and Parliamentary Candidates."

THE Anglo-French Association, *L'Entente Cordiale*, offers two travelling scholarships of £10 each. The competition will be held on November 4th, at the City of London School, and be conducted by the Society of French Masters in England. It is open to British subjects of both sexes (except those born of French parents) born on or after January 1st, 1886, and educated in the United Kingdom, who are students or former students of Board schools or other schools where education is free or at mere nominal rates. The association also offers for competition among members of either sex at university colleges two scholarships of £20 each. The examination will be conducted on June 10th by the Society of French Masters in England. Candidates must be (a) British subjects, not of French parentage, and must not have been educated in a French-speaking

country; (b) must have been born on or after January 1st, 1882; (c) must have been members of a university or university college for at least a year. Applications should be sent to Mr. J. Belfont, Broglence Villa, Melrose Terrace, West Kensington, W. The hon. secretary, Mr. W. H. Sands, 6, Fig Tree Court, Temple, E.C., will give any further information.

FULL particulars of the holiday courses for teachers, to be held this year at the University of Grenoble, have been received. The courses extend from July to October, and applications to attend should be addressed to M. Marcel Reymond at the University.

THE Teachers' Guild has now issued full information concerning the holiday courses for teachers it has arranged at Tours, Honfleur, Neuwied, and Santander. The representatives of the English committee this year are in the order of each of the places named:—Mr. E. C. Fisher, Dover College, Dover; Mr. Edward Buck, Christ's Hospital, West Horsham; Mr. S. de Ste. Croix, Christ's Hospital, West Horsham; and Don Fresno de la Calzada, Santander, and Mr. S. Beirne, Astillero, Province of Santander; to whom (according to the centre chosen) intending students should send their names as early as possible.

WE are glad to be able to record that on March 18th Dr. R. P. Scott, staff inspector of the Board of Education, was presented, at the College of Preceptors, with a testimonial in recognition of his services to the organisation and development of secondary education. The gift took the form of a solid silver salver with an engraved inscription and an envelope containing a cheque. Canon Bell, who presided, referred to Dr. Scott's founding of the Incorporated Association of Headmasters, and his work as headmaster of Parmiter's School. Sir Philip Magnus referred to the advice and help Dr. Scott had given to the Board of Education in framing the Education Act of 1902. In common with all our readers, we trust that in his new capacity Dr. Scott will continue for many years to influence and help secondary education.

WE have received a copy of the fourteenth annual report—that for 1904—of the Incorporated Association of Assistant-masters in Secondary Schools. The association now numbers 1,748 members, 213 having joined during 1904. Ten years ago the membership was only 492, so that there is every reason to hope that the association will be soon really representative of assistant-masters in every grade of secondary school. More attention, we are glad to notice, was given in 1904 to education itself, a subject the importance of which should appeal with unique force to schoolmasters. The outside world and administrative authorities are likely to regard the work of the association much more sympathetically when they find that the energies of the members are devoted most largely to the improvement of educational methods, and not, as has been often the case in recent years, to prolonged discussions of mere personal professional matters which, from a national point of view at least, are of minor importance. We are glad to be able to congratulate the association on a good year's work.

THE Modern Language Association has divided its publication into two parts. Up to now the *Modern Language Quarterly*, first under the editorship of Dr. Heath, and subsequently of Mr. Greg, endeavoured to supply two needs, and succeeded in satisfying neither the scholars nor the teachers. A quarterly that appeared three times a year could not expect to be of much use to teachers for correspondence or queries, while several scholars would not patronise a journal that was not devoted wholly to their interests. Therefore it was determined, after much discussion, to separate the old *Quarterly*

into two—the one to be devoted to scholarship, and to attempt to do for modern languages what the *Classical Review* and the *English Historical Review* do for other subjects. This has secured Dr. J. G. Robertson as editor, and will appear shortly. The second is to be solely devoted to the interests of teachers.

WE have received the first number of the second paper, which is entitled *Modern Language Teaching*, and is published by Messrs. A. and C. Black. The magazine is edited by Prof. Walter Rippmann, so that teachers of French and German may be sure of finding in its pages everything of importance concerning modern methods of teaching their languages. Prof. Rippmann is to have the assistance of Mr. F. B. Kirkman, Dr. E. R. Edwards, Mr. E. L. Milner-Barry, and Mr. A. Somerville, who will act as an advisory committee. The magazine runs to thirty-two pages, and the price of each number is sixpence. We wish the youngest of our contemporaries every success and a wide sphere of usefulness.

THE Board of Education has announced that the following additions will be made to the sums payable as grants under the regulations for the instruction and training of pupil teachers:—

1. An addition of £3 to the rate of grant payable under Art. 24 of the "Regulations for the Instruction and Training of Pupil Teachers, 1903," on account of each pupil teacher employed and instructed under the conditions laid down. The rate at which grant will be payable will therefore be £6 instead of £3.
2. (i.) An addition of £2 to the rate of grant payable under Art. 28 (iii.) of the same regulations, and (ii.) an addition of £1 10s. to the rate of grant payable under Art. 28 (b) of the "Regulations for the Instruction and Training of Pupil Teachers, 1904." This will have the effect of increasing the rate of grant payable on account of pupil teachers not instructed in a recognised centre to £4 both for the period from January 1st to July 31st, 1904, and for the period from August 1st, 1904, to July 31st, 1905.

AN Inter-Departmental Committee has been appointed (i) to ascertain and report on what is now being done, and with what result, in respect of medical inspection of children in public elementary schools; (ii.) and further, to inquire into the methods employed, the sums expended, and the relief given by various voluntary agencies for the provision of meals for children at public elementary schools, and to report whether relief of this character could be better organised, without any charge on public funds, both generally and with special regard to children who, though not defective, are from malnutrition below the normal standard. The committee consists of Mr. H. W. Simpkinson, C. B., assistant secretary of the Board of Education (chairman); Dr. H. F. Parsons, assistant medical officer under the Local Government Board; Mr. C. Jackson, chief inspector of elementary schools; the Hon. Maude Lawrence, chief woman inspector; and Mr. R. Walrond, senior examiner of the Board of Education, with Mr. E. H. Pelham as Secretary.

MR. CHARLES GODFREY, assistant-master at Winchester College, has been appointed Headmaster of the Royal Naval College, Osborne, in succession to Mr. C. E. Ashford, who will be transferred to the Royal Naval College, Dartmouth.

SCOTTISH.

SIR HENRY CRAIK, K.C.B., since demitting office at the close of last year, has been making a triumphal progress through the country he has served so long and so well. The long series of complimentary functions that have marked this progress culminated in a great public banquet given in his honour in the Caledonian Station Hotel, Edinburgh, by educational bodies and by the Municipal and County Council

authorities. The Earl of Elgin occupied the chair, and in giving the toast of the evening, said that it was just thirty-six years since Sir Henry Craik and he first foregathered in the classic hall of Balliol, and he remembered well that he looked up to their guest with the respect that was due from a freshman to a senior member of his college. Since that time he had met Sir Henry in many capacities, and the feeling of these early years had continued to mark all their relations ever since. Sir Henry Craik had been a distinguished member of that great Civil Service of which it was an honourable tradition that it served all parties of the State with equal zeal and fidelity. Sir Henry's former chiefs, if they were able to be present with them, would testify to the unvarying devotion with which he had met all their demands, and would willingly attribute to him much of the credit for any success that had been earned.

SIR HENRY CRAIK, who was enthusiastically received on rising to reply, was in a delightfully reminiscent mood, and gave some charming sketches of the university life of Glasgow and Oxford of forty years ago. Referring to his official life, he said that the Department of which he had been so long chief had come in for much criticism, but on the whole no Department of State had received more kindly consideration and more generous recognition. Upon the relations between the political chief and his subordinates in the permanent service depended the smooth working of the whole legislative machine, and his own experience was that these relations had been among the most pleasant of his life. The first brings to administration the wide outlook gained in the free arena of politics and in the bracing air of public life. The other brings technical knowledge, and the fruit of careful study of administrative methods. Their opinions might not always coincide, but when there was absolute mutual confidence between them, all difficulties might be overcome.

MR. SCOTT DICKSON, the Lord Advocate, in introducing the new Scottish Education Bill, explained that in its main features it represented last year's Bill as amended during the committee stage. The "county district" will still remain the educational unit, but increased power of combining or dividing such district is granted under the new provisions. The only unsatisfactory clause in the Bill is that which deals with the school fund. It is proposed that the existing debt, so far as it represents capital expenditure on buildings, shall be divided into two portions. Capital expenditure on the buildings and sites of higher class schools will be a charge on the whole district, while the capital expenditure in elementary schools, both existing and future, will be a charge on each parish. We have thus set up at once the vicious system of differential rating which is already the cause of so much friction between contiguous parishes. To make the *parish* the unit of taxation for elementary schools, and the *district* the unit for secondary schools, is to emphasise the cleavage between the two stages of education and to complicate needlessly the financial operations of the new Boards. The new Bill was expected to make clear the essential unity of all grades of education, and the appearance of a clause so diametrically opposed to that principle is a distinct disappointment to the friends of the measure. The prospects of the Bill are by no means promising. The general political outlook is uncertain in the extreme, and Mr. Thomas Shaw, in following the Lord Advocate, was by no means effusive in his welcome of the measure, and suggested not obscurely that he and his friends would try to make the parish the unit of administration as well as of taxation. *Nous verrons.*

THE annual report of the Carnegie Trust, which has just been issued, contains no distinctly new features, but reveals the

most gratifying progress along the lines that have in previous years been laid down. The grants for buildings and permanent equipment in the different universities amounted to £20,146. The trustees expect to find, at their next quinquennial distribution, that the more clamant needs for new buildings have been satisfied, and they then hope to be in a position to give a foremost place to the claims of endowments for teaching purposes, as they fully recognise that the strengthening of the teaching staff is of the highest importance. The scheme of endowment of post-graduate study and research has entered upon its second year, and while it is too early as yet to express an absolute opinion on this part of the Trust's operations, the governors are satisfied from the report of their examiners that much valuable work is being done. Applications for fellowships, scholarships, and grants for the session 1905-6 should be lodged on or before May 1st with the Secretary to the Trust, from whom application forms and regulations can be obtained.

IN regard to the second part of the Trust's work—the payment of class fees—little discretion is left to the Trustees, and there is little room for the development of a policy. But the restriction of the number of classes that a student can take in any year, and the increase in the standard of preliminary education required from medical beneficiaries, prove that the committee responsible for this department are not mere distributors of funds, but, so far as the conditions permit, have in view a definite educational policy. The total expenditure on this side for the year ending December, 1904, was £45,903, representing the class fees of 4,910 students. Compared with previous years there is an increase all round—in the amount of fees paid, in the number of beneficiaries and in the average fee paid per student. But the slight increase of forty-three in the number of beneficiaries, and of £290 in the amount of fees paid for the current session, leads the Trustees to conclude that the limit of expenditure under this head has now been reached.

THE Educational Institute of Scotland has issued a memorandum to the Secretary for Scotland and to members of Parliament dealing with the new minute on the training of teachers. The Institute, while heartily approving of the main provisions of the new minute, suggests certain amendments which, in its opinion, would lead to substantial improvement upon its present terms. Strong objection is taken to that part of the minute which provides for the institution of "subsidiary courses of training at approved centres in connection with a secondary or higher grade school." This clause, it is held, might lead to the complete defeat of the main principle of the new scheme, viz., to bring the training of teachers into close connection with university organisation, and might result in a more absolute separation from university life than exists even under present conditions. The Institute further considers that the university element on the new committees should be substantially increased, and should include representatives from the Senate, the University Court, and the University General Council. In view of the desire to have a closer organic connection between the training of teachers and the universities, it is certainly a serious blot in the constitution of the new committees that the university element is hopelessly outnumbered by the school-board element. Before the new minute receives its final form it is to be hoped that the balance will be somewhat redressed in favour of greatly increased university representation.

PROF. DARROCH, Edinburgh University, delivered a valuable address to the Association of Secondary Teachers on the "Reform of the Arts Curriculum of the Scottish Universities." The present preliminary examination, according to Prof. Darroch, is constructed on too rigid lines. When drawn up, some of the subjects now included in the Arts curriculum

were not then taught in the universities, and however well adapted it was for the conditions that then existed, it was based on far too narrow a foundation to suit the varied curriculum of a satisfactory Arts course. Coming to a consideration of the regulations for the M.A. degree, he showed that the number of ways in which the degree could now be obtained was almost infinite. He thought that the old Arts degree with all its limitations was of greater educational value than the "hotch-potch" courses taken by students of the present day. The address, which has been published by Mr. Thin, of Edinburgh, contains also an able contribution to the discussion of the training of secondary teachers, and is specially valuable in view of the recent minute.

IRISH.

TRINITY COLLEGE has published the following new regulations with reference to its entrance examination. In place of the usual entrance examination students who desire to matriculate and have passed either the senior or middle-grade examination of the Intermediate Board may offer to the senior lecturer the marks obtained in the following subjects:—(1) arithmetic and algebra; (2) Euclid; (3) Latin; (4) either Greek, French, or German; (5) Latin composition; (6) English composition; (7) modern history and geography. Students who have not passed in any one or more of these subjects can do so at any entrance examination in Trinity College, and may then matriculate without having again to qualify in the remaining subjects. If this proposal is merely intended as a slight effort to co-ordinate secondary and university education, there is nothing to urge against it; but the impression has been created that the Board of Trinity College is trying to induce students of the middle-grade age—that is, as a rule, under seventeen years—to enter the university, and against this the schools have entered a strong protest, as tending to lower the university standard and to attract immature pupils away from school into college. The Board should make its position clear on this point and remove the misunderstanding, if such there be.

THE Irish Association of Women Graduates and candidate Graduates discloses, in its annual report for 1904, a record of a year's useful work. In April last a memorial was sent to the authorities of University College asking that all lectures given in the college by the Fellows of the R.U.I. should be open to women students of the Royal University. In June a memorial was addressed to the late Chief Secretary begging that in any settlement of the university question all teaching by Fellows should be open to women, and a similar memorial was also addressed to the Senate of the Royal University. Another memorial was laid before the Board of Trinity College in November, asking them to provide practical instruction in education for secondary teachers; to this an informal but favourable reply was received from the Provost. The presidents of the Queen's Colleges in Cork and Belfast have also been interviewed on the same subject. The Intermediate Board has been asked to reconsider their rule that no teacher in any Intermediate school can act as examiner under the Board. After the adoption of the report an informal discussion took place on registration and training for secondary teachers in Ireland and on the best methods of improving the position of assistant-mistresses in intermediate schools.

ON February 22nd a meeting of the Dublin Education Society was held at the Royal Dublin Society's rooms, Mr. James Hegarty, president, in the chair. A paper on "Home Lessons" was read by Miss Scarlett.

AT the annual meeting of the Board of Agriculture and Technical Instruction Sir Horace Plunkett, the vice-president, made his usual statement. In reference to agricultural education, he said that they had now arrived at a well-defined stage in their practical programme. Complaints had been made as to their policy, but those counties who were fortunate enough to get fully trained men in the early years of the Department had now entered on the second stage of their programme, and had made provision for the systematic instruction of the sons of farmers. Sixteen agricultural schools and classes are now in session in nine counties, attended by some 300 students. The country and the Department are now ready for rapid progress, and next year will probably see a great increase in the provision for systematic agricultural instruction. Four agricultural stations have been acquired, one in each province, at Avondale in co. Wicklow, Ballyhaise in co. Cavan, Athenry in co. Galway, and Clonakilty in co. Cork, which will serve as general centres for practical advice, information, and help to farmers. In this connection the advice given to the public by Dr. Windle, the new President of the Queen's College, Cork, in reference to technical instruction, should be taken to heart. Technical instruction cannot be given in a few hours or in a few weeks. *Ars longa.* It is a standing difficulty that parents and students think that they ought, after a few months' instruction, to be put in the way of earning what is called "big money."

AT the Rathmines School of Commerce two series, each of ten lectures, are being given on railway economics. Additional interest is imparted to these lectures, since, although similar courses have been given in the London School of Economics, they are the first ever given in Ireland. One series is given by Mr. J. E. Leggatt, of the Midland and Great Western Railway, on the Business of Railway Companies with the Board of Trade, the Railway Commissioners, and the Houses of Parliament, and the other by the Principal, Mr. C. H. Oldham, on Railway Economics, including the Economic Theory of Railway Rates.

A LARGE meeting was held at the end of February in the Rotunda, Dublin, under the auspices of the Gaelic League, to protest against the illiberal policy of the British Treasury as regards Irish education in general, and the teaching of the Irish language in particular. The chief interest lay in the statement of the salaries of Irish primary-school teachers. The average salary for a principal teacher of an Irish school is for a male teacher £100, for a woman £85; for assistant-teachers, for a male £70, for a woman £57. In England the average for a principal male teacher is £151, and in Scotland £175. At the same time over two-thirds of the Irish teachers have salaries that cannot rise beyond from £44 to £86 a year. Father Finlay pointed out that some of the difficulties are caused by the multiplication of schools in villages beyond all reasonable bounds. For example, there is a village in the north with a child population of 232, and five schools. Consequently the grant for the 232 children is distributed among five teachers.

WELSH.

ONE of the subjects in which the Welsh ought to excel is music. Yet we believe that in the University and in the county schools the theory of music is not widely taken. However, a movement seems to have arisen in North Wales among the elementary schools to learn violin-playing. It is said that large classes are being formed in Rhyl, Llandudno, Wrexham, Festiniog, and that the subject is being taken up with enthusiasm. In Wrexham, 400 juvenile violinists are reported to be receiving lessons. The instruments are purchased on the instalment system, by payment of a few pence a week. Children of from ten to twelve

years of age are receiving weekly lessons, and the idea is becoming popular. As far as can be seen, the movement is entirely outside of the examinational and grant-earning system. It will be interesting to observe how soon the attempt will be made to drag a successful movement into the earning of grants. Yet it is pleasant to note an independent and spontaneous educational movement.

THE Denbighshire Education Committee of the County Council has had a report from a sub-committee regarding the teaching of temperance principles in all the elementary schools of the county. The committee recommend a conference with the head teachers to consider the best way of giving effect to a resolution in favour of such teaching. It was said that the Board of Education "interposed difficulties." The Board was criticised as "putting back the hands of the clock in the matter in counties such as Cheshire, where such teaching has been given for many years." At the same meeting, a report was presented with regard to the higher education of the county. The county schools, it was pointed out, were now to be supported with increased funds on a system of block grants and capitation payments, and should any other financial aid be required it should be met by an increase in the tuition fees.

IN the well-known College Histories Series (of Messrs. F. E. Robinson & Co.) has now appeared a volume on the "History of the University of Wales and its Constituent Colleges." The story of Welsh education is an extremely interesting one for all educationists, and English readers will at once recognise the importance of a general sketch of Welsh education from such writers as Mr. W. Cadwalader Davies and Prof. W. Lewis Jones.

THE appointment of a Departmental Committee of Enquiry to consider the question of a National Museum and Library for Wales necessarily brings out the fact that Cardiff has greater financial resources than any other town in Wales. Cardiff offers for the museum a site worth £10,000, building grant of £13,500, and £2,000 a year maintenance grant, and the municipal museum, for the library a site worth £10,000, together with a maintenance grant of £1,000 a year, and the town and Cardiff University College collection of Welsh books. North Wales answers that, large as the amount is, if sums of money are estimated according to the amount of sacrifices made for education in the past and present, then other parts of Wales could show even a stronger case than Cardiff. Again, it is said that Cardiff is as difficult to reach from some parts of Wales as is London. With regard to the library, it should be stated that the collection of Welsh books and MSS. either at present in the University College at Aberystwyth or promised to the National Welsh Library if established at Aberystwyth, are so comprehensive and invaluable that for some time, it is said, the real National Welsh Library will be at Aberystwyth, even if the national library building should be established in Cardiff. Other places desirous of making representations for the seat of the Museum and Library are Swansea, Carnarvon and Llangollen.

IT is not necessary here to go fully into the case of Merionethshire. The Board of Education has sent an urgent demand to the Merionethshire County Council, requiring it to state definitely what steps it intends to take to meet the claims put forward by the managers of voluntary schools in the county. Mr. Haydn Jones has shown that, though the committee has passed on the grants earned by the non-provided schools, "there is a deficit of £1,007 15s. 3d., even if the schools were maintained at the pre-1902 state of efficiency." Practically, every non-provided school has sought the assistance of the Board of Education to recover their arrears of

maintenance. The County Council has determined that none of the rates shall be used to pay further for any of the costs of these schools. In these circumstances the reply of the Merionethshire Education Committee to the Board of Education has been: "That this Committee is of the opinion that the Board of Education has no right to call upon it to discharge any obligation under the Education Act of 1902 in respect of non-provided schools, inasmuch as the Act makes it a condition precedent to the duty to maintain the schools that the schools shall be put in such a state of repair as the Committee may deem reasonable."

RECENT SCHOOL BOOKS AND APPARATUS.

Classics.

A Companion to Greek Studies. Edited by L. Whibley. xxx. + 672 pp. (Cambridge University Press.) 18s. net.—There is a great deal of information in this volume, each part of which is written by an acknowledged authority. Mr. Tozer writes on geography, Canon Tristram on France and Flora (a new idea in such a book, and a good one), Mr. Hicks on chronology and philosophy, Sir R. Jebb on literature; on art, Dr. Penrose, Dr. Walstein, Mr. Earp (painting), Mr. A. H. Smith (vase painting), Prof. Ridgeway (gems), and Dr. Archer Hind (music); Prof. E. A. Gardner on religion, Mr. Whibley on constitutions, Mr. Wyse on law and finance, Mr. R. J. G. Mayor on population and slaves, Mr. H. J. Edwards on colonies and commerce, Prof. Ridgeway on weights, measures, and coins, Mr. Oman on war, Mr. A. B. Cook on ships, Dr. Gow on the calendar, Miss Harrison on ritual of birth, marriage, and death, Dr. Wilkins on education, Dr. James on books and writing, F. W. Cornish on the position of women, Lady Evans on dress, Prof. E. A. Gardner on daily life, Prof. Allbutt on medicine; dialects, epigraphy and palæography are treated by Mr. R. A. Neil, Mr. E. S. Roberts, and Mr. Rendel Harris; textual criticism by Sir R. Jebb; metre by Dr. Verrall; the history of scholarship by Dr. Sandys. Then the mere list of contents takes up a considerable space. If the book had been larger, we might have called it a cyclopædia. Its scale, however, is such that it is well fitted to instruct the candidate for the classical tripos, for whom it is no doubt intended. The first part of the tripos, as now constituted, contains so much that is extraneous to pure scholarship that the candidates have to cram for it. In this book he will get his information from people who have a right to speak, and in a very convenient form. It does not contain any new theories, and the articles are all moderate in tone (even those which are written by persons committed to a theory). We cannot enter into detailed criticism of such a work as this. Suffice it to say that, whilst the writers speak with authority, their statements, as far as we are able to test them, are accurate, and generally show acquaintance with recent research, and the proportions of space given to each subject are judiciously allotted.

Longmans' Latin Course. Elementary Unseens. viii. + 103 pp. (Longmans.) 1s. 6d.—There are 112 easy extracts in this book, together with hints on construing and a vocabulary and notes. We cannot see why notes and vocabulary are included in a book of unseens. The text also is treated in an odd manner. A few quantities are marked, and a few significant words printed in thick type. Now some books are for learning, and they may be provided with helps; others for testing, and they should have none. This book falls between two stools.

Catullus in the Fourteenth Century. By Prof. Robinson Ellis. 30 pp. (Frowde.) 1s. net.—This may be regarded as a supplement to Prof. Robinson Ellis's edition of Catullus. In it he records the latest theories as to the discovery of the text of Catullus in the fourteenth century, and examines certain authors of that date for traces of acquaintance with Catullus. The pamphlet is full of out-of-the-way learning. The part which is most generally interesting is the record of Petrarch's acquaintance with Catullus, as shown by his notes in a MS. of Virgil.

Cambridge Series for Schools and Training Colleges. Virgil, Aeneid III. By A. Sidgwick. 110 pp. With Vocabulary.—Mr. A. Sidgwick is too well known as an editor of school-books to need any bush, and the present edition is abridged from that already published by the same press. The introduction is very short indeed, and a good part of it consists in metrical notes. The pupil, however, ought not to be left to imagine, as he certainly will do, that elided syllables were not pronounced at all. The notes are business-like. We do not at all approve of vocabularies to single books, and hope they will soon be condemned.

The Enthydemus of Plato. With revised text, introduction and notes, by Dr. E. H. Gifford. 51+81 pp. and text not paged. (Clarendon Press.) 3s. 6d.—We are glad to welcome this scholarly edition of a brilliant dialogue; an edition not made to order, but evidently the fruit of many years of study and thought. We could wish that a scholar so able had seen fit to give us an edition on a larger scale still. Dr. Gifford knows his authorities, and gives us the fruit of very wide reading, which includes the remarkable work of Lutoslavski. Students will read with attention Dr. Gifford's attempt to show that the Enthydemus was written after the Phaedrus, and soon after B.C. 388, and that it is specially directed against Isocrates, whose plea "Against the Sophists" was published between the two dialogues and refers to the Phaedrus.

Xenophon's Anabasis. Book I., xxxii. + 117+68 pp.; Book II., 48+38+68 pp.; Book III., 54+39+68 pp.; Book IV., 51+30+68 pp. Each volume with Introduction, Notes, and Full Vocabulary. By J. Marshall and C. S. Jerram. (Clarendon Press.) 1s. 6d.—We do not approve of vocabularies except for the first stages of Greek and Latin work; the present vocabularies, however, are for the whole work, and are open to less objection. Apart from that point, this is a useful school edition. Mr. Jerram's work on the Anabasis is familiar already to school teachers. In this series, Book I. contains a general introduction on the subject-matter of the book, Xenophon's style, and the Greek army; the other three have a few pages dealing with their special books. The narrative is broken off into paragraphs, each with its heading, and the headings form a summary of the story. The notes are generally judicious, and not overdone; the print is good, and the books easy to handle.

We have also to record the publication of a *Key to Latin Grammar Papers*, by A. C. Liddell, 132 pp. (Blackie), 3s. 6d. net, and a *Latin Verb Table*, by E. J. Lloyd (Spottiswoode), 1s. net. The latter gives the various suffixes which make the verb forms, classified under the stems from which each tense comes.

English.

Goldsmith's The Good-Natured Man and She Stoops to Conquer. By Austin Dobson and G. V. Baker. xxx. + 285 pp. (Heath.) 1s. 6d. net.—This is another volume of the *Belles Lettres* series, concerning which we have spoken already with high approval; and it commences the section (iii.) devoted to the drama in this collection of texts. Mr. Austin Dobson's

name is one to conjure with in eighteenth-century matters, consequently his introductory biography and criticism is as good as can possibly be, while, at the same time, he manages to condense it into less than thirty pages. "Goldsmith's essay on *The Theatre*," which he contributed to the *Westminster Magazine*, and is frequently overlooked among his literary work, is sandwiched between the two plays, and adds much interest to this volume. The epilogues spoken to both plays form a happy addition to the text, and the notes are kept down to a minimum, but that minimum is scholarly and excellent. Two brief glossaries are worth much attention from the student of philology and antiquarian matters. Altogether excellent.

Macaulay's Essay on William Pitt. By R. F. Winch. viii. + 141 pp. (Macmillan.) 2s.—There is a unique modesty about Mr. Winch's procedure in this edition. He prints an "introduction," but it consists of a paragraph from James Cotter Morrison (whose second name is misspelt "Colter"), and one from Milman's "Memoir of Lord Macaulay." Such editorial self-suppression will probably receive its due recompense of reward, but it is to be questioned whether, in a series taking such rank as this, it is not an error—even on the right side. The notes are voluminous, quite half the volume in point of fact; but one of much interest is taken from Lord Rosebery's estimate of Pitt's emoluments as "£10,532 and an excellent house in Downing Street." And Macaulay's mistake in printing the name of Barrère with two "r's" instead of three is followed by this editor, although a most cursory reference to Carlyle would have corrected him.

The Wisdom of the Desert. By James O'Hannay. 259 pp. (Methuen.) 3s. 6d. net.—There is much to be said in praise of this volume if we had space wherein to say it, although in form it is an anthology and a compilation. But it is original. Not to every one would the thought have occurred to turn to the lives of the hermits of early Christianity and endeavour to form a "wisdom book" out of their teaching. Mr. Hannay has dug deep into the literature of his subject, and his index of translated passages opens up a field for other inquirers; for it is scarcely possible, one thinks, that this volume should not have the effect of interesting many in a new and almost unexplored region of Early Christian literature. There are eighteen sections, which deal with a great variety of topics; and to those who love Thomas à Kempis and S. Augustine's "Confessions," will probably be accepted as welcome spiritual nourishment. To those who do not, however, this book may be recommended on account of its innate value and interest, and the introduction is a piece of work well worthy of attention. No better account of the ancient hermits exists in any easily accessible form in English. Mr. Hannay writes with great earnestness about a movement which is, as he says, often and quite unjustly either overlooked or misrepresented. Mr. Hannay writes as a devotee if not as a partisan; but the subject is practically unknown, is intensely interesting to an unprejudiced mind, and can only do absolute good by being honestly examined and having its historical and spiritual value duly appraised.

Tennyson's Idylls of the King. Golden Treasury Series. 421 pp. (Macmillan.) 2s. 6d. net.—This edition calls for no remark except to note the fortunate inclusion of this poem in a series which is unique in the world of books. There is no editing to criticise, no preface or introduction. The reader is merely confronted with an exquisite reproduction of Thomas Woolner's "Queen Guinevere," and then sent straight away to the poet's pages; but this extremely handy edition will probably be widely appreciated on account of this characteristic alone.

Milton's Paradise Lost. Book VI. By A. E. Roberts. 66 pp. (Blackie.) 1s.—This is a handy edition of an important part of Milton's great epic. In the introduction a notable feature is a summary (illustrated by diagrams) of Milton's conception of the universe, which is capably done. The notes are good, and the condensed treatment of the subject of Milton's metre is as good as it can be in the space allotted to it.

The New Temple Reader. By E. E. Speight. xvi. + 286 pp. (Horace Marshall.) 1s. 6d. net.—It is a novel idea to compile a reading-book with an eye to the comparative study of literature. Some people would be frightened by such a programme, but we are convinced that Mr. Speight has begun to mine a vein which will yield rich ore. Lest anyone should confuse this volume with "The Temple Reader" already widely used and known, it is expressly stated that the object in this case is to draw reading matter from the best literature of many ages. This has been done with great care; the literature of the East, of Greece and Rome, of Italy, France, and the Celts, have all been laid under contribution, and the selections are all novel and interesting. No better book exists at present, and when we say that even the celebrated "Aucassin and Nicolette" supplies part of the reading matter here, it will be seen at once that a wide-eyed and comprehensive view of literature has been adopted in its compilation.

Arachnia. By James Robertson. 212 pp. (Macmillan.) 5s. net.—This is a volume of occasional verses by a late headmaster of Haileybury, who died in 1903 at the age of sixty-eight. As occasional verse they are, in some cases, quite happy and creditable. That Mr. Robertson had the trick of verse is already known, although his range was very small in thought. As a memorial to the personality of one who, to judge from the late Mr. C. W. Furse's portrait of him, must have been an exceedingly amiable and scholarly man, this volume is likely to arouse much interest in the Haileyburians of his time; and it must be said that in the translations, which take up quite half of the book, his talent was very considerable.

Legends of Charlemagne. By Thomas Bulfinch. xviii. + 271 pp. (Dean.) 2s. 6d. net.—This makes an excellent volume whether regarded from the point of view of a gift book or a reading book for class work. It is intended to render intelligible the many allusions to Charlemagne and his contemporaries and his times which occur in reading. This design has been well carried out. The introduction is well done, and the succeeding legends and stories are equally well told. The volume may be recommended to all those who are in want of a book which will step somewhat outside ordinary reading book lines as to its matter, and while yet preserving its prime characteristic will aim at enlarging the mental grasp of the pupils.

Dickens. By W. Teignmouth Shore. 83 pp. (Bell.) 1s.—The author has produced an eminently readable book upon Dickens, although he gives us little that can be called new about his subject. The actual biography of Dickens is told very briefly, and the episodes which led to the breaking up of his home life are covered with a most discreet reserve. The critical estimate of Dickens which follows, supplemented as it is by a criticism of "David Copperfield" as an example of Dickens' genius, is worth attention. Nothing better of its kind has been done recently, and in escaping from the trammels of journalese and writing freely, the author has done a real service to literary criticism.

First Steps in English Parsing. By F. Ritchie. 20 pp. (Longmans.) 6d.—There is nothing novel in this little booklet, but it is a sound and useful introduction to English grammar notwithstanding. Two principles are to be found

running through all the exercises; one, whereby the function of any word in a sentence may be somewhat easily made clear, and the other, the constant use of contrasted sentences to make grammatical distinctions clear. These pages are simple in expression and well worthy of attention.

Steps to Literature. Seven volumes, ranging in price from 10d. to 1s. 6d. (Edward Arnold.)—Side by side with these seven volumes go six others under the name of "Home and Abroad Readers." It is obvious that the sets are meant to be complementary, and thus we find the first "steps" taking in tales of the homeland, while the first reader deals with scenes from the homeland. We do not know how this correlation, always possible in the hands of a good teacher, will work out with little children; there is, however, no doubt that it will be possible and profitable when the children arrive at Book III. (England and Wales) and at Book III. in the "Steps"—Stories from English and Welsh Literature. The "Home and Abroad Readers" have been noted before, but the Steps are new. All the work is well chosen and is evidently the selection of the competent; while the pictures, reproductions of great works of art, strike an altogether new note. Very few people know their pictures well enough to make full use of this delightful set; and possibly a few notes would have been an addition. But will not Mr. Arnold lay us still further under a debt of gratitude by publishing for schools four or five volumes, say in 4to, of the great pictures of the world? On such books there would be a great and constant run. All who are interested in an attempt to correlate literature, history, geography (and painting) should see these unpretentious volumes.

History.

A Student's History of Scotland. By D. W. Rannie. x + 324 pp. (Methuen.) 2s. 6d.—This is an excellent book. After two introductory chapters on Scottish geography and the differences between English and Scottish history, Mr. Rannie tells the story of Scotland from the earliest times to 1746. Naturally, the years of struggle for Scottish independence against Edward I. and II. of England, and the history of the sixteenth and seventeenth centuries, are more fully treated than other periods. There are four maps and a good index, but no bibliography. The author's main thesis is that what was most useful and enduring in Scottish history came from English influences. He is, therefore, clearest and most enlightening in the various relations between the two countries, and on the Franco-Scottish alliance, which hindered the union of Britain and influenced Scotland so powerfully in many ways. Many points in ecclesiastical and constitutional history which have been slurred over by previous writers are here made plain, and there are but two omissions of which we have to complain. We do not learn the story of the formation of the Scottish shires, and we are left to guess by what bodies the Solemn League and Covenant of 1643 was authorised (p. 220). But, with these small exceptions, we heartily commend the book to our readers. It is a piece of sound history, without partisan bias, either on the many ecclesiastical questions, or on the matters concerning Mary Stuart, or the relations between English and Scottish kings in the middle ages.

Illustrative History: British and Old English Period. By E. J. Bailey. xii. + 283 pp. (Horace Marshall.) 2s. *Illustrative History: Tudor Period.* By N. L. Frazer. (Horace Marshall.) 2s.—Each of these books consists of well-chosen and well-executed pictures, and of extracts from writers on history, some of whom are contemporaries, some historians, some novelists. As to the wisdom of including these last, we

may have a doubt. The others are certainly useful, and we think the series will prove very desirable in the class-room.

A Short History of England. By E. P. Cheyney. xvi. + 695 pp. (Ginn) 6s. 6d.—Our American friends continue to put out excellent histories of England, and this of Prof. Cheyney's is one of the best. Clearly written, well illustrated, provided with bibliographies to each chapter and an index, they should be read by our teachers, if not adopted as class books. But their limitations are curious and instructive. Prof. Cheyney can recommend Bush's "England under the Tudors," yet he retains "Morton's Fork." His account of the origin of political parties is unsatisfactory, because he reads modern differences into the past. And his account of eighteenth century diplomacy is confused and imperfect, apparently because there is no good history in English of that period. Does not Prof. Cheyney read German?

Birmingham and the Midlands. 128 pp. (Blackie.) 8d.—Apparently this is one of a series of little books, called "The English Counties: a Series of Supplementary Readers," intended to quicken the interest of pupils in their immediate surroundings. The object is attained. Plenty of maps and other illustrations are added to a pleasantly written text, topographical, historical, &c. Indeed, it is so good that one only wonders at the absence of a map of the city itself.

Urban VIII. By W. N. Weech. 120 pp. (Constable.) 3s. 6d. net.—This is the Lothian Prize Essay for 1903, and consists of a well-written monograph on the Pope who reigned from 1623 to 1644, and was thus contemporary with most of the Thirty Years' War. Besides the life, there is a bibliography and four appendices.

Medieval British History. By J. S. Lindsey. 222 pp. (Heffer.) 6s. net.—This is the "second volume" of "Problems and Exercises in British History," parts of which are already favourably known to our readers, and is the first complete volume of the series to appear. It embraces the period from Caesar's invasion, and even earlier, to 1509. The essential features of this new departure in text-books are the bibliographies—which leave nothing to be desired for all classes of students, and include everything from encyclopædias to novels—and model answers to 160 typical questions. Each answer occupies a page of this quarto book, and has its own bibliography at the foot. There is much beside contemporary sayings—to which we wish Mr. Lindsey would publish a key—introductory sketches and chronological synopses as to which our only desire is that they were more continuous. But the teacher of classes, the solitary student, and the lecturer, will find in this volume all that they want, and more. It is an excellent manual of history.

The Local Examination History of England. By T. J. Walker and G. Carter. 180 pp. (Relfe).—A well written and generally correct little history. There are very few errors, the most remarkable of which is the date of the abolition of American slavery (p. 170).

Stories from Modern English History. By M. S. Hancock. 144 pp. (Pitman.) 1s.—A simple reader in very large type, and an abundance of pictures, coloured and otherwise, of various degrees of merit. "Spellings" occupy the last four pages.

A History Syllabus for Secondary Schools. 375 pp. (Heath.) 5s.—The work of a committee of the New England History Teachers' Association appears in this book, which outlines a four years' course of study for pupils in upper schools. It embraces all history. Ancient, mediæval and modern, English

and American, are the subjects to be handled respectively in a year of school among the other school subjects. It somewhat takes our breath away, but to the English teacher it will set an ideal and supply him with an exhaustive bibliography.

Science and Technology.

Botany Rambles. Part III., Autumn. By Ella Thomson. Pp. 253 to 377. (Horace Marshall.) 1s.—This book is intended mainly for revision, after practical lessons have been given. It is written in a pleasant and chatty style, devoid of technicalities, and, if employed with discretion, will be found very useful as a class-reader for lower forms. Some of the illustrations are rather crude.

Stories from Natural History. By Richard Wagner. Translated from the German by G. S. viii. + 177 pp. (Macmillan.) 1s. 6d.—These stories may be recommended both for their literary elegance and their scientific accuracy. The little volume will form a delightful and popular reader in the lower forms of secondary schools for both boys and girls. The illustrations give an additional charm to the volume.

Across the Great St. Bernard. By A. R. Sennett. xvi + 446 + 111 pp. (Bemrose.) 6s. net.—Ostensibly an account of a journey from Martigny across the famous pass, this book consists chiefly of descriptions of, and reflections upon, Swiss scenery and customs in general. Mr. Sennett is happiest in simple descriptions of his actual experiences, and these contain many passages of great interest; but he has an irritating way of leaving the narrative in order to indulge in page after page of florid "word-painting" and moralising, or to expound, not always quite accurately, some phenomenon of elementary science. The euphuisms of the author provoke unfavourable comparisons with the extracts from Ruskin, Tyndall, Washington Irving and other writers which are so freely introduced, and the imagination of the reader is wearied rather than stimulated by the constant straining after "fine writing." On the other hand, the description of the Hospice, with its monks and dogs, and the accounts of mountain industries are extremely readable. The book is well illustrated by cuts and reproductions of photographs. A map would have added much to its interest.

Heat. By J. H. Poynting and J. J. Thomson. 354 pp. (Griffin.) 15s.—This volume is the third of a series by the same authors, forming a text-book on physics. The previous volumes dealt with the properties of matter and with sound. In this, as in the previous volumes, the subject is treated in a manner which is suited to students who wish to approach the subject from the experimental side, and who are not sufficiently advanced in their knowledge to make use of the higher treatises which introduce advanced mathematical methods. The volume is of the highest merit, the authors' names alone being a sufficient guarantee of its utility to students of physics.

Maxwell's Theory and Wireless Telegraphy. By F. K. Vreeland. 247 pp. (Constable.) 10s. 6d. net.—Part I. of this volume is a translation of M. Poincaré's "Maxwell's Theory and Hertzian Oscillations." The excellent translation is the work of Mr. Vreeland, who has added the several chapters on "The Principles of Wireless Telegraphy," which form Part II. of the volume. The object of the book is to give a physical treatment of Maxwell's theory and its applications to modern problems; and the author demonstrates successfully that the theory can be translated into the language of everyday life without resorting to mathematics. The numerous illustrations add much to the clearness of the text. The volume will be of considerable value to all who have not the mathematical knowledge required in the reading of previous standard works on the subject.

Practical Chemistry. A Second Year Course. By G. H. Martin (Bradford Grammar School).—In this book the laboratory guide and the students' notebook are combined, spaces between the instructions for consecutive experiments being left blank for the student to record his results and observations. The course is divided into the following groups: (1) combining weights; (2) acids, bases, and salts; (3) investigation of washing soda, and revision experiments. Numerical examples are given at the end of each group of experiments.

Inductive Chemistry (Elementary). By F. W. Armstrong. 20 pp. (Printed by S. M. Atkins, Wells.) 6d.—We have here a brief description of seventy-three elementary experiments. The application of the term *inductive* to this publication must depend entirely upon the initiative of the teachers who may use it for class purposes.

Mathematics.

An Elementary Course of Mathematics. By H. S. Hall and F. H. Stevens. xi. + 98 (Arithmetic) + 145 (Algebra) + 138 + iv. (Geometry) pp. (Macmillan.) 2s. 6d.—The main purpose of this text-book is stated to be that of providing in a single and inexpensive volume a short course of arithmetic, algebra, and geometry, specially adapted to the needs of students who, after leaving school, desire to continue their study of elementary mathematics either in evening classes or by private work. The book is written with the appreciation of the needs of beginners and with the clearness of exposition to be expected from the authors. In the selection of matter there may be room for differences of opinion; for example, it is not likely that students who wish to acquire a knowledge of algebra and geometry will care to spend much time on the later sections in arithmetic, though these sections are undoubtedly useful for a different type of student. Room should have been found, we think, in the course on algebra for a treatment of elementary graphs; the short discussion in the section on geometry is too meagre and too deficient in concrete examples. The geometrical section consists of Parts I. and II. of the "School Geometry" by the same authors; we hardly think that this section will quite meet the needs of the students whom the authors have in view. In any case, some attempt should have been made to state the simpler properties of similar figures; these can be treated in a very elementary way when incommensurable ratios are not considered and are of fundamental importance in all practical work.

Elementary Algebra. By W. M. Baker and A. A. Bourne. ix. + 468 + lxxvi. pp. (Bell.) 4s. 6d. *Elementary Algebra.* Teachers' Edition. By W. M. Baker and A. A. Bourne. Parts I. and II. (Bell.) Price of each Part, 5s. net.—Notices have been given of Parts I. and II. as they appeared, and we shall only state now that, while the theoretical treatment seems to us to be in various places defective, the book is written in a very attractive way and provides a large number of interesting examples that are well within the competency of the average schoolboy. It should be easy in a new edition to remedy the defects we have in view and thus make the work in all respects a satisfactory introduction. In the Teachers' Edition the answers are given on interleaved pages opposite to the examples.

Test Papers in Mathematics. Arranged by John Dougall. 64 pp. (Blackie.) 1s.—These Papers have been drawn up to meet the needs of candidates who are preparing for the Preliminary Examinations of the Scottish Universities. They are thoroughly representative of the questions set in these examinations and should be very serviceable.

The Elements of Trigonometry. By S. L. Loney. xii. + 240 + xiv. pp. (Cambridge University Press.) 3s. 6d.—The contents of this text-book consist in the main of the easier portions of the same author's "Plane Trigonometry," Part I.; the chief difference lies in the rearrangement of the matter, so that those portions required in the solution of triangles are taken up earlier. In accordance with recent practice, four-figure tables are used, but practice is also provided in the use of tables with a greater number of figures. The marked preference of the author for five-figure tables seems to us not justified, so far as the practical needs of the pupil are concerned. It is, no doubt, very desirable that some examples should be given that require seven-figure tables; but it is very seldom in practical work that the data warrant the use of more than four figures, and it is unsound teaching that recommends five- or seven-figure tables for such work. Some attempt should be made, we think, to adapt the answers to the data; surely the height of the flagstaff (p. 24) should not be left as 86'62025 . . . feet. As a mere arithmetical result the answer is correct, but examples of a practical kind should be treated with some respect to the limitations in the measurements involved. Examples for practice in pure calculation should be stated as such. The author's text-book of "Plane Trigonometry" is so favourably known that nothing more need be said about the exposition of this book than that it possesses the merits of the larger work. Four-figure tables of logarithms, natural sines and tangents, and logarithmic sines and tangents are appended, and the exercises are very numerous.

Mathematical and Physical Tables. Prepared by John B. Clark. 32 pp. (Oliver and Boyd.) 6d.—This is an excellent set of Tables, well adapted for use in the school-room or laboratory. The Mathematical Tables include logarithms and anti-logarithms, natural sines, cosines and tangents, and logarithmic sines, cosines and tangents, all to four places of decimals. There is also a table of squares, cubes, square roots, cube roots and reciprocals of the integers from 1 to 100. The only table of importance that is omitted is one of radians; perhaps that may be included in another issue. The Physical Tables seem to have been compiled with great care and should be very serviceable. The Tables are printed on strong manilla paper and may conveniently be carried in the pocket. The book can be thoroughly recommended.

Graphic Statics. By T. Alexander and A. W. Thomson. viii. + 50 pp. (Macmillan.) 2s.—This little book consists of a number of problems and practical examples, and though complete in itself, is primarily designed as an introduction to the work "Elementary Applied Mechanics," by the same authors. The descriptions are clearly written, the examples are all of practical interest and the book is well suited to the needs of beginners. At times the drawings are a little crowded, but that is a defect due to limitations of space.

Pendlebury's Arithmetical Scheme B Test Cards. Standards III. and IV. (Bell.) 1s. net each.—For each standard there are thirty-six cards with two copies of answers in a stiff cardboard case. The number of questions is 720 for Standard III. and 756 for Standard IV. They should prove handy for the hard-worked teacher when he wishes to test the progress of his pupils.

Brooks' Parabola Curve. (London: W. J. Brooks.) 1s.—The instrument is cut in transparent celluloid, and its axis, focus, and latus rectum are engraved on it. So far as we have been able to test it, the curve is accurately drawn, and should be of great use both for geometrical conics and for graphical work.

Miscellaneous.

A History of Education in the United States. By Edwin G. Dexter. xix. + 656 pp. (New York: The Macmillan Company.) 8s. 6d. net.—Dr. Dexter does not pretend that his book tells fully the story of the development of American education, and modestly suggests that it might more appropriately have been called a chronicle. Be that as it may, he has provided an absorbingly interesting summary of the chief events in the growth of the system of education which has played so important a part in ensuring the national and commercial success of the United States. The establishment of the people's schools is dealt with in the first part of the book. The beginnings of educational effort on the part of the settlers in Virginia are explained; and the growth of the Dutch schools in the New Netherlands and of the early schools in the New England colonies provides material for a fascinating piece of reading. The educational developments in the various other States are each in turn considered with sufficient fulness to give a good idea of them as a whole, but not with an amount of detail likely to cause weariness. Higher and special education form the subjects of the second section, and the record of the early struggles of Harvard, Yale, and other universities serve to show that a country able to overcome the difficulties which have been surmounted in the United States deserves all the success with which her efforts have been crowned. The last part of the volume is devoted to educational extension, and supplies a brief history of the rise of American libraries, newspapers, learned societies, and other institutions. We heartily commend the book to our readers; it should be on the shelves of every student of the history of education.

The Infant School. By J. Gunn. 412 pp. (Nelson.) 3s. 6d.—This is an exhaustive volume. Dr. Gunn takes us through every detail of theory and practice, and, scattered here and there are valuable suggestions which do not, as a rule, come before local authorities and schoolmistresses. The writer plainly admits that infant schools are a necessity, because home-training is impossible. If this is so, and there seems no reason to doubt it, what becomes of the long sections devoted to home training in the current books on education? The parent cannot train; he has neither time, knowledge, nor apparatus; therefore the State steps in. The retort, of course, is equally obvious, and it is this—the infant requires no "training." But for those whole-hearted servants of the small child, we mean the women-teachers of England, this book assumes that their cause is righteous. Whether a solemn assertion that in infant schools the five formal steps of Herbart are necessary or are even useful, many will doubt, and whether the curriculum is to be so crowded as our author suggests, many will doubt; whether, too, there is any gain in our labelling mixless Froebel-Herbartians is a matter on which teachers will have different opinions. It is much to be regretted that no great genius has arisen who will sweep away our discordant psychologies and will give us something that is rational and intelligible; for it cannot be right and useful to say, with the German, that Froebel is "only for children." In practice we can only make Froebel and Herbart agree by disregarding both. There is scarcely a subject interesting to infant schools which is left untouched by the writer, and the lists of useful books are admirable. One sentence we quote: "The boy who leaves school without a competent knowledge of the Bible in its English version, whatever else he may have learned, cannot be regarded as educated." We wonder if Dr. Gunn thinks that, on the whole, teachers, not to speak of boys, are possessed of a competent knowledge of the Bible in any version.

Report of a Visit to American Educational Institutions. By E. S. A. Robson. 173 pp. (Sherratt & Hughes.) 1s. net.—

In view of the number of books dealing with American education recently published, there is no reason why British teachers should remain in ignorance of anything that happens in the schools and colleges of the United States. The present volume is the outcome of a visit made by the author to collect information concerning elementary and higher education in the States. The ground covered in the book is much the same as that with which the report of the Mosely Commission deals. Readers will find here an account by a practical and experienced teacher of many American methods, and the information will enable them to institute an interesting comparison between the schools of two great countries.

Recollections of Emanuel School. By Henry P. Maskell. 64 pp. (Endowed Schools Office, 53, Palace Street, S.W.) 1s. 6d.—This short school history, which deals with the founders of the school, the poor of Emanuel Hospital, the early days of the school, the present school, and other subjects, should prove of interest to old and present boys. The writer believes thoroughly in his school, and has collected much information previously inaccessible to ordinary readers.

Sound Learning and Religious Education. By Alice Gardner. 29 pp. (Cambridge University Press.) 1s.—A lecture delivered at the King's College, London, Women's Department, on October 5th, 1904, at the beginning of the courses of Biblical study.

German Universities. By Dr. Mabel Bode. 43 pp. (King.) 1s. net.—A concise review of Prof. Paulsen's work on the German University system.

Hockey as a Game for Women. By Edith Thompson. (Edward Arnold.) Paper, 1s. net; cloth, 2s. net.—After a brief sketch of the history of hockey as a game for women, and a few much-needed and sensible hints as to outfit and dress, the author gives the rules of the game and practical directions for playing. Of course, the most natural way of learning hockey, like other games, is to watch it or play it on the field, but Miss Thompson's explanations are so clear that anyone who has read them and studied the plan on p. 19 ought to have a very good idea of how the game is played. The book should be invaluable as a handy book of reference, for it is clear, concise, and well arranged.

A Boy's Control and Self Expression. By Eustace Miles. 572 pp. (Published by the Author at Cambridge.)—It is always good to take up a book written by an enthusiast, and Mr. Miles is well known for his persistent preaching of cleanly, healthy doctrine for the formation of cleanly, healthy lives. His fame as an athlete, and his definite leaning to simple diet, tend to impress the young teacher; thus a respectful hearing is at once demanded and obtained. The book is divided into three parts: introductory chapters for those who have charge of boys, physical and external helps, mental helps; and the general impression left is that it is a book that aims at making a boy clean in life and "fit" for games. The advantages in such a book are, first, that it is not written by a cleric; next, that it is written by an athlete; and, lastly, that it speaks on every page about a subject of enormous importance. The disadvantages the book shares in common with all such books. The illustrations are many and admirable, and a good deal may be learnt from them even by physical instructors; but there is a want of restraint in the pages which makes us feel that the book, illustrations and all, would be better if it were half as long. Yet every one must be thanked who skates over this thin ice for us. How long are we to wait before half-a-dozen doctors will, at the instance of the Board of Education or any similar branch of State service which cares for boys' welfare, produce, and sign, and distribute over England a pamphlet, or even a leaflet, telling schoolmasters in

English that cannot be misunderstood what is agreed upon in the medical profession in regard to: (a) the character of food for the adolescent; (b) the results of the use of alcohol; (c) the physical mistakes of the young; (d) the general conditions which go to make life more happy. It is of little use to say that the lay world is agreed on these points, for it is not. It is of not much use to say that such things cannot be discussed, when every writer on education demands that they should be. At present we seem to be all members of a conspiracy; and the young might, if they only knew, point at us as the Silent Ones.

The "A. L." Pupil Teachers' Admission Register. 16 in. x 13 in. 50 pp. (Arnold, Leeds.) 500 names, 6s.; 1,000 names, 10s. net.—This register has been compiled in strict accordance with Articles 30 and 13(d) of the "Regulations for the Instruction of Pupil Teachers," issued by the Board of Education. The record shows the full name and address, date of entry, age, parents' occupation, and place of previous education of the pupil teacher, and a column is provided to show his progress. It is especially useful for centres which are attended by teachers from schools under different local authorities. The ruling is excellent; ample space is provided throughout, the paper is of very good quality, and the book itself is particularly well bound. It is one of the best official books we have seen.

The "A. L." Pupil Teachers' Centre-Class Register and Record Book. 14 in. x 9½ in. 23 pp. (Arnold, Leeds.) Forty-five names. 2s. net.—This register exactly meets the requirements of paragraphs 13(d) and 28(a) of the "Regulations for the Instruction and Training of Pupil Teachers," and of Form ix. P, issued by the Board of Education. It is an attendance register arranged in four quarters, together with a record of the time spent on each lesson, followed by a summary showing the total length of time spent in each subject during the year. It is beautifully ruled, especial care having been taken with the fly-leaves. There are no waste spaces, and the lettering and numbers are very clearly printed. Good paper is used, and it is well bound.

The "A. L." Pupil Teachers' Centre Report and Record Book. 11 in. x 9 in. 28 pp. (Arnold, Leeds.) 1s. net.—This book meets the requirements laid down by the Board of Education, and is intended to serve for teachers who are indentured for a one, two, or three years' engagement. Clear spaces are provided for a record of time spent on each subject, together with a summary at the end. Two report forms (one for each half-year) are given showing the number of marks obtained in the examination and also for the home-work. Four tabulated spaces are arranged for criticisms of certain lessons, and half a page is set apart for the headmaster's general report with regard to conduct, teaching ability, and progress. The final page is reserved for a general report on the pupil teacher's apprenticeship for the use of the Local Education Authority. This book should form a very valuable record, not only on the official side, but also for the young teacher. It is a piece of very clear book-keeping, well printed and firmly bound.

The "A. L." Pupil Teachers' Register and Record Book of Training in Elementary Schools. 10 in. x 8 in. 24 pp. (Arnold, Leeds.) 1s. net.—This combination of record and register shows the attendance of the pupil teacher at each lesson during the morning and afternoon, and by ingeniously arranging brackets and underlining, it can show at once whether the teacher gave the lesson after special preparation or in the ordinary course of the daily work, or only listened to the class-master's teaching. It is ruled for three years, and at the end of each year a summary is provided which shows the total number of attendances made and the number of times the school has been open. Half a page is left for the headmaster's report on

the conduct, teaching ability, and general progress made during the year, and this is countersigned by the correspondent and also on behalf of the Local Education Authority. The last page is devoted to two general reports on the whole apprenticeship, with special reference to the young teacher's character and conduct by the headmaster and the school managers. We regret to find that space has been provided on the inside cover for a record of the pupil teacher's success at external examinations in science and art subjects and other examinations. These external examinations of persons following a course of training have done much to develop the very faults the new system is intended to provide against. The book is well printed, and it forms a most complete and durable register.

Art.

Japanese Colour Prints. By Edward F. Strange. pp. viii. + 148 and 84 plates. (Wyman.) 2s. 3d.—Mr. Strange's book is addressed rather to connoisseurs and collectors than to students in the school sense of the term. It is composed mainly of accounts of the various schools of colour-print designers, though it includes also some supplementary chapters, of which that on "Technique" is of special interest, and gives very full information about the Japanese methods of block-cutting and colour-printing. The length and difficulty of the names of the designers, combined with their habit of frequently changing their names, makes it at times rather difficult to follow the career of a particular man. For instance, the artist so well known as Hokusai adopted successively the names of Katsugawa Shunshō, Sōnō Shunrō, Gounmatei, Hishikawa Sōri, Hokusai Shinsei, Raito, Raishin, Taito, Tei-itsu, Tokitaro Kakō. However, the author has said what he had to say (and he has much that is interesting to tell) plainly and clearly, and if the book is nevertheless rather hard reading, that is none of his fault.

The compiler of *Macmillan's Nature-Study and Drawing Cards* has had the happy idea of attaching to each of the cards of which the series is composed a real specimen of the leaf of the plant with which it deals. For the rest, the drawings and designs founded upon the natural forms are for the most part pleasing.

Nature Drawing and Design Cards. In two parts. By Frank Steeley. (Bacon.) 2s. 6d. each.—Mr. Steeley has, in one or two cases, selected rather poor specimens of the flowers he illustrates, but his drawings are careful and characteristic of the plants depicted, and are quite of the kind which should be useful in guiding students of design to use plant forms with intelligence, marking the essential points in their growth, and treating them with discretion. It is a pity that in the design cards the good guidance given in the nature cards is not better followed up.

Brushwork and Design Cards. Coloured. By Frank Steeley. In Two Parts. (Bacon.) Part I. (Elementary), 1s. 6d.; Part II. (Advanced), 2s.—These cards are not strikingly different from numerous other brushwork copies which have appeared within the last few years. They are on the whole crisp and clean in execution, but they show little evidence of taste or of power of decorative composition.

Water-Colour Painting. By Mary L. Breakell (Penumbra.) (Edward Arnold.) Cloth, 2s. net; paper, 1s. net.—A practical little book designed to help students, both beginners and advanced, who are studying alone. We should have thought that in these days of all but universal art-classes most would-be painters would be within easy distance of lessons in water-colour painting, but to those who are not this little volume, intelligently studied, might be of real use.

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 and Abuse of Graphs.

WHEN the reform in mathematical teaching was first set on foot, amongst a flood of talk—some of it wild and irresponsible—there was one remark which was eminently practical and sensible. It was to the effect that the time had come when mathematics should no longer be taught as if each branch was to be kept in a "watertight compartment." For years teachers had been in silent rebellion against systems of examination which made it illegitimate to use algebraical symbols in an arithmetic paper; which debarred the use of the trigonometrical ratios in Euclid or Higher Pure Geometry; which sometimes insisted on geometrical methods in conics, where analysis might have been used with equal or better advantage; and which encouraged "calculus-dodging" and other pernicious habits, all tending to an enormous waste of time without any compensating advantages. Now, by a fairly general consent, all this is to be changed; in future an intelligent student is to be allowed a wider discretion in the use of methods, and he is to be encouraged to utilise whatever is serviceable in any part of his mathematical equipment. This, at least, is the ideal, and if attained it should result not only in a great gain of time but also in a larger freedom, carrying with it increased educational value and interest.

Unfortunately, a new evil is springing up. The way in which graphical work is being dragged into every branch of elementary mathematics—in season and out of season—is likely before long to set a fashion in examination papers and text-books which will rob graphs of their legitimate value, and force them into all kinds of fanciful and artificial use. Indeed, the mischief is already rife. Apart from anything which bears my own name, I have in my possession sixteen elementary text-books, containing graphical treatment, all published within the last three years. These books include arithmetic, algebra, geometry, and trigonometry, besides a few which deal solely with graphs. In a few of these the graphical work is kept within reasonable and legitimate bounds, but in others graphs are allowed to run riot, and are applied to solve questions which any intelligent boy or girl could solve mentally in a few seconds. Surely this is a grave mistake. Properly used, graphs are of great value; in the first place, they are a splendid corrective for inaccurate work (it is quite surprising how a single point wrongly plotted will set a careless worker thinking when he comes to draw his graph); then, in connection with simultaneous equations of the first degree, roots of quadratic equations and variations of quadratic functions, they throw a flood of light on a student's algebraical solutions, otherwise often very mechanical and but half understood; and lastly, they have a separate and not unimportant use as "ready-reckoners," from which practical results can be obtained by interpolation. But all this kind of work takes time, and the amount of elementary mathematics covered in a school term, with only four or five hours a week, is likely to be very seriously diminished if a boy is everlastingly being called upon to draw graphs in any branch of elementary mathematics.

In a recent review I read: "Teachers should avoid teaching graphic methods to the exclusion of proper mathematical work; they should be, as a rule, used as adjuncts or illustrations rather than substitutes." With this opinion I entirely agree: when there is an obvious, simple, and straightforward solution to a question, it ought to be used in preference to a graphical treatment, which is elaborate and cumbrous in detail, and has

not even the saving merit of enforcing some law or principle. The same reviewer further remarks: "A little graphic work goes a long way." Yes, if it is employed in a consistent and coherent manner; that is to say, if it aims at teaching fundamental principles and enforcing them by apt illustrations, followed by well-chosen examples for practice. If, however, graphs are scattered broadcast, without rhyme or reason, all over a boy's elementary course, there may be much expenditure of time and labour with very little result, and there is great danger lest he should come to regard graphical work as nothing better than a series of squared-paper tricks, devoid of underlying principles and having no sequence or coherence.

I am criticising a system, not any particular examination or text-book, but in support of what I have said I should like to draw attention to a few types of examples which have already found their way into print. In four recent text-books questions of this kind are to be found for *graphical solution*: "Two men start from the same point in opposite directions to walk round a circle, one mile in circumference; if they walk at six and four miles an hour respectively, find the time of their first and subsequent meetings."

Any person of decent intelligence would solve this mentally before the graphical solver could get ready his mathematical instruments! As an experiment I read this question to my family at breakfast a few days ago, and the answer was given in half-a-minute by one who had never learnt a line of algebra. "Clock questions" by graphs are found in several books. It is a pity such questions were ever invented, and but for the exigencies of examination papers they might have been buried in oblivion long ago. If, however, they are to be treated graphically, and then only approximately, they are more useless than ever, and involve a deplorable waste of time.

Then there is a large class of examples in which the data lead quite naturally to two simultaneous equations of the first degree. These are usually of the simplest type and can be solved algebraically or graphically at discretion; either solution is to be preferred to some of the fanciful methods on the pages of recent text-books. The so-called "alligation" questions have always been objected to in arithmetic because of the very artificial way in which they were handled in order to avoid the use of symbols. If the use of algebra is no longer prohibited, why should a new and even more artificial method be offered for imitation?

In more than one book I have found a graphical solution asked for an example like this: "Before his last match a man's batting average was 40, and at the end of the season it was 36. How many innings did he play?" As the data lend themselves immediately to the algebraical statement

$$40x = 36(x + 1),$$

can any one seriously defend the introduction of graphs in such a case?

It would be easy to quote other instances of a similar kind, all showing how frequently a student's attention is being drawn away from the natural common-sense methods of arithmetic or algebra to the consideration of squared-paper puzzles. I use the word "puzzles" advisedly, for some of the solutions are so elaborate and intricate that they carry no strong conviction to the mind of the learner, who probably admits the success of the method without knowing why it succeeds. If such methods are admissible they should be reserved for cases in which there is some real gain in the use of graphs, either in illustration of some general principle or in curtailing calculation where several connected results can be presented in a form which appeals to the eye as well as to the reason. With heterogeneous graphical solutions constantly forced on his attention in all sorts of fanciful ways, a student is extremely likely to get an entirely wrong idea, and to imagine that the use of graphs is only a kind of up-to-date pictorial mathematics which ought to supersede the straight-

forward methods of arithmetic or algebra whenever sufficient ingenuity to attain this end can be exercised. I do not think this picture is overdrawn. I have a very large correspondence with mathematical teachers all over the kingdom, and some of these appear to think that nowadays the one essential thing a young mathematical master has to do is to teach graphs. Never mind how young and ignorant the pupils may be, graphs are "up-to-date" and therefore must be taught. This is how graphomania is affecting some of the younger members of the teaching profession, but they are already beginning to rebel against the unreasonable demand upon the time of themselves and their pupils. Amongst older men I have over and over again heard the remark that "graphs are being done to death."

Is it not possible to preserve the undoubted utility of graphical work without making a fetish of it? It may be doubted if there is much good to be attained by introducing pupils to graphs until they get to easy simultaneous equations. The plotting of points and the drawing of barometric or statistical charts is easy and attractive work for children, and as such may have a certain limited value, but it can hardly be dignified with the name of serious mathematics and very little time need be allotted to it. Until a pupil can grasp the idea of one quantity varying its value through its relation to a second quantity, there is no tangible principle upon which a study of graphs can be based. From this point onwards the legitimate opportunities for graphical illustration are frequent enough without invading the realms of fancy. Though I would not altogether exclude graphical solutions of problems on work and time, distance and time, interest and principal, quantity and cost of material, and the like, I feel strongly that their use should be limited to cases in which they present in a compact and visual form results which could otherwise only be obtained after considerable arithmetical or algebraical work. The value of such problems is greatly enhanced if they are grouped so as to illustrate guiding principles; if they occur as isolated puzzles in the use of squared paper, any educational value they may have is seriously impaired.

Above all things, let us teach principles rather than dodges, and let us not, by unreasonable usage, bring into ridicule and disrepute what is now rightly recognised as a valuable part of a mathematical education.

H. S. HALL.

Constructions in Geometry.

THERE is at present no well-understood agreement as to giving or withholding proof when a construction is asked for in a geometry paper. The following distinction seems to me to meet the case admirably:—

(1) When a *general* construction is asked for, e.g., "draw tangents to a given circle from a given point," the *complete* construction should be written out, and the proof given in full.

(2) When a *particular* construction is asked for, with numerical data, e.g., "draw tangents to a circle of 2.3 cm. radius from a point 4.7 cm. from centre—measure their lengths," a *sufficient outline* of the construction should be written without proof.

- (1) would be marked for
 - (a) Theoretical sufficiency of construction.
 - (b) Theoretical sufficiency of proof.
 - (c) Accuracy of drawing, tested by eye.
- (2) would be marked for
 - (d) Correctness of drawing, tested preferably by the numerical measure of a length.
 - (e) Sufficiency of written outline.

The relative value of (1) and (2) would be about 10 to 6 in the case given; though in many cases the inequality would be reversed, as the drawing is sometimes very difficult when the theoretical construction is quite easy.

In class teaching the relative marks for (a), (b), (c), (d), (e) would be varied from time to time according to the stage of the learner, and the purpose for which the question is set.

E. BUDDEN.

Macclesfield.

THE STUDY OF PEDAGOGICS BY CORRESPONDENCE.

The School World Club.

Week	I. Chapters I.-III. (inclusive).	Week VIII. Chapters XIV. and XV.
"	II. Chapters IV. and V.	" IX., X., & XI. Chapter XVI.
"	III. Chapters VI.-VIII. (inclusive).	" XII. Chapter XVII.
"	IV. & V. Chapters IX. and X. (inclusive).	" XIII. Chapters XVIII. and XIX.
"	VI. Chapter XI.	" XIV. Chapters XX. and XXI.
"	VII. Chapters XII. and XIII.	" XV. Chapter XXII. and Appendix.

Comments and Questions on the Reading of Weeks XII. and XIII. to be sent to the Editors on or before April 17th.

SELECTED COMMENTS ON CHAPTER XVI.

Pestalozzi's insistence upon the importance of training character.—As Gertrude is made by Pestalozzi, in his "Leonard and Gertrude," to say to the schoolmaster, "It is all well and good for them [the children] to learn something, but the really important thing for them is to be something." So Pestalozzi, throughout his painful though eventful career, insists unceasingly that the success of education must be judged by the effect upon the characters of our pupils. As Ruskin put it: "Education is not teaching people to know what they do not know, but to behave as they do not behave." But though all this is profoundly true, it by no means justifies the current cant of trying to excuse the shortcomings of great schools by asserting that the want of intellectual training in the boys they turn out is more than compensated by the excellent training their characters have received. Intellectual efficiency may be joined to moral excellence.—F. T. MERRICK.

Pestalozzi's enthusiasm.—This short sketch of the reformer's life brings to mind Paul's recapitulation of his own trials in II. Cor. ii., 24-28, including the words, "in weariness and painfulness, in watchings often, in hunger and thirst, in fastings often, in cold, and nakedness." Let the present-day schoolmaster study p. 319 of our book, and ponder Pestalozzi's words in a letter to his friend Zschokke: "For thirty years my life has been a well-nigh hopeless struggle against the most frightful poverty. . . . For thirty years I have had to forego many of the barest necessities of life, and have had to shun the society of my fellow-men from sheer lack of decent clothes. Many and many a time have I gone without a dinner and eaten in bitterness a dry crust of bread on the road, at a time when even the poorest were seated round a table. All this I have suffered, and am still suffering to-day, and with no other object than the realisation of my plans for helping the poor,"—and he must ejaculate: Can enthusiasm and conscientiousness further go? Half-a-dozen schoolmasters endowed with the spirit of Pestalozzi could revolutionise English education.—G. H. WYLES.

Some of Pestalozzi's principles, p. 332.—After studying this summary of guiding principles, one is led to wonder whether there is anything new under the sun—anything new, at least, in pedagogic plans. Many articles and books to-day seem devoted to the announcement as recent discoveries of methods elaborated many years ago by one or other of the reformers to

whom Quick introduces us with such grace. The fact is, English teachers do not so much lack knowledge as they need earnestness and the spirit of self-sacrifice.—A ROWLAND.

Is Quick quite fair? "An assistant who, though a school-master, was, strange to say, perfectly ready to learn, and to throw himself into carrying out another man's ideas," p. 340.—Are schoolmasters as a class impervious to new ideas? Do they as a body show an indisposition loyally to work out another man's plan? My experience is not extensive enough to enable me to supply an answer to my questions. I suspect, however, that Quick, imbued with the influence which Pestalozzi's character and work exert, had become a little impatient of ordinary schoolmasters, for compared with Pestalozzi they are bound to appear callous, indifferent, and wooden. But perchance there are some who have not bowed the knee to Baal.—M. A.

Section 65. "At this time he was no less loved by his assistants, who put up with any quarters that could be found for them, and received no salary."—As a headmaster this fact in connection with Pestalozzi's life at Yverdon appeals to me with special force. Surely some great change has taken place in the characters either of headmasters or assistant-masters? Have associations of teachers anything to do with the paramount importance attached by masters to questions of salary, status, and so on, or is it that the men of old were of finer stuff?—R. TURNER.

Section 116. "The great educating force is the personality of the teacher."—It is to be hoped earnestly that as a nation we shall begin to realise this soon. If our first idea is to obtain a good enough education as cheaply as possible, we shall not train our children in the manner described and practised by Pestalozzi. Good education must always be costly. To secure men and women of ability with strong personality and of high character, teaching must be made as attractive a profession as any other, and young men and women must cease to regard it as a half-way house to something better.—W. STYLES.

This is a truth recognised by all educationists, yet how little inducement is offered in schools, especially in secondary schools, to induce the best men to take up the work of education. Money is spent freely, in many cases extravagantly, on fine buildings and expensive fads of all kinds; but the teacher—the most important item in the educational programme—is ill-selected, ill-trained, or ill-developed, yet teachers need development as much as the children they are afterwards to instruct; but so ill-paid are they that frequently they cannot afford the rest and refreshment that arduous work renders imperative. Pestalozzi rose superior to these disadvantages, but Pestalozzi was a hero, an enthusiast, and he did not live in the twentieth century.—L. MARION JONES.

MUTUAL AID.

THE object of these columns is to afford teachers the opportunity of asking questions of and giving assistance to colleagues. The questions received to which replies are solicited will be printed first; following these will be the answers which have been sent in, and to make such replies intelligible to all readers, they will be accompanied by the question.

Readers are invited to send answers to any of the questions asked below by our correspondents; and it should be remembered that the success of the column depends upon the hearty co-operation of readers.

The questions should deal only with educational matters, using the expression in a broad sense, and the publication or otherwise of any question must be left entirely to the discretion of the Editors.

Questions and answers should be addressed to the Editors of THE SCHOOL WORLD, St. Martin's Street, London, W.C., and should be accompanied by the full name and address of the sender, though not necessarily for publication. Each question or answer should be on one side only of a separate sheet of paper.

QUESTIONS.

E. R. D. Wanted the publisher and price of any annotated edition of Addison's "Cato," or failing this, the text published separately.

A. B. Can any reader tell me the meaning of the italicised words in Joanna Baillie's song, "The Chough and Crow?"

"The night wind sighs with feeble moan
Like infant charity."

A. B. Wanted the name of the publisher of Chaucer's "Astrolabe," with notes (not the E.E.T.S. edition).

H. H. W. From whom can I obtain, in quantity, cardboard or other models of French coins, for use in class?

D. C. What book treats of "logical method" as illustrated in some one branch of knowledge?

M. W. Wanted a good method of teaching children under eight to spell.

A. E. W. What books provide suitable courses in Physics for girls?

QUESTIONS WITH ANSWERS.

J. M. S. Can any reader kindly tell me of some book on geography which (i.) explains why a particular trade has sprung up in a certain town or district; (ii.) which goods are exported and imported at each port?

F. L. L. You will find the "causal method" of teaching geography used in the series edited by Prof. L. W. Lyde, and published by Messrs. A. and C. Black.

C. H. C. (i.) Why does mercury fall when a tube of it is inverted over water, i.e., why could not a barometer consist of a tube of mercury inverted in water?

(ii.) Has any science master had trouble in the determination of CO_2 in copper carbonate? I find it impossible to get anything like a good result either by heating or by solution in dilute hydrochloric acid. Why is this?

(iii.) What simple way of finding the mass of salt in 1 cc. of a salt solution is there other than by evaporation?

H. R. (i.) The water runs up the tube as the mercury falls?

(ii.) What about copper basic carbonate?

(iii.) Twaddle's hydrometer for strong solutions and titration with decinormal silver nitrate for weak ones. Try also electrolytic resistance.

The School World.

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SIXPENCE.

SCHOOL CADET CORPS.

By EDWARD C. GOLDBERG, M.A., Capt. 1st Middlesex R.E. (V.):
O.C. Tonbridge School Cadet Corps, attached to 1st Mx. R.E. (V.)

I.

FROM the point of view of national expediency there is no doubt as to the necessity of the maintenance and extension of Cadet Corps. It needs not the authority of Lord Roberts to convince either the "man in the street" or the "arm-chair critic" of the use of training as many Englishmen as possible at some time of their lives, and the earlier the better, to shoot with the rifle and to be capable of carrying out simple movements under word of command. Even if cadet corps training stopped at these two factors of potential military efficiency, there would not be the slightest hesitation on the part of all citizens to admit the desirability of this method of national preparation for the emergency of self-defence.

The only serious objections to cadet corps on purely national grounds are those which on the one hand deny the permanent value of such early military training, and on the other find a cause of the shrinkage of the volunteer movement in the feeling of satiety for amateur soldiering, which is in some cases begotten of service in school cadet corps, boys' brigades, and similar organisations. The former argument does not admit of discussion, because it is purely a matter of opinion; the latter must be accepted as partially true, but as not destroying our appreciation of the value to the country of the early military training of her sons. If some drop volunteering when they are men because they have had enough of it as boys, many others continue their service in later years in a much more thorough way than otherwise would have been the case; and though it were true that "on balance" there were an apparent loss to the community in officers and men, yet the collective result would be found to leave something on the right side of the national assets.

But it is with the scholastic aspect of cadet corps that we are more particularly concerned; and however tempting may be the subject of the wider interest, we must limit ourselves here to a candid enquiry as to what educational advantages

are bound up with the present system of cadet training in secondary schools. We must also endeavour to draw some conclusion as to the expediency of the extension of that system, with a view to a decision on the still more important question of the effect of compulsory service in cadet corps on the efficiency of a school.

In a few of the schools possessing cadet corps there is a system of compulsory service, making membership of the corps incumbent on all members of the school; but in the large majority the service is purely voluntary. In some of the schools, the headmaster gives every possible encouragement and help to the corps, in others he treats it as a necessary bore; many of the assistant-masters in some take an active part in the work of the corps, in others it is not possible for them, or they may be unwilling to do so; in some the majority of the boys are cadets, in others the minority. In some cases the parents are anxious for their boys to join, in others they think boy volunteers unnecessary, and would rather their sons either did something else or "went in for it later." Here the most prominent boys in the school are most prominent in the corps, there the boy magnates hold aloof. Possibly most of these present tenses should be written in the past; but whatever be the tense aspect of the variations of feeling and membership in different environments, the fact remains that many boys are not members of cadet corps where such exist, and many are not members because such corps do not exist.

One reason why, as a rule, only part of a school forms the whole of a corps is, of course, that the establishment is a matter of Government regulation, the numbers being limited by the War Office authorities. There is, however, a strong but misguided opinion, held by many who are members (officers and cadets) of school corps, that it is better to have a comparatively small number of keen efficient, to make membership difficult to obtain and therefore desirable, than to have a large corps composed of boys of widely different grades of military enthusiasm and proficiency. The argument, though well enough in the case of adult enrolled volunteers, and not always well then, is based on a very natural sentiment. It may be imagined that most form-masters would like to have their classes arranged on the same delicious principle of elimination and uniformity. To keep

the cadet corps small, and make membership a privilege, is a course which may result in an entire evanishment of the value of the privilege in the eyes of the majority in a school, and is opposed to certain practical considerations, which must weigh in the successful conduct of a corps, and of which something will be said in the second of these articles. But if there be an educational and scholastic value in a cadet corps, the desire to keep it select instead of constantly to increase the numbers can have no justification.

People who have read, enjoyed, and been convinced by Dr. A. T. Schofield's charming book, "The Unconscious Mind," will not require many arguments to lead them to the conclusion that military training in schools is fraught with educational advantages. Even the imperfect and somewhat intermittent routine of the cadet corps cannot be without value in the production of certain habits, such as of order, punctuality, concerted movement, obedience, self-control, endurance, resourcefulness, command, above all, "perfect execution," &c., of all of which it may be said that they are the effects of service in the corps on the training of the (so-called) unconscious mind.

The advantages from the scholastic point of view are :—

(1) The practice of a discipline which is different in kind from that of the class-room, and is yet an aid to it.

(2) The provision of opportunities for delegation of authority to boys who otherwise might not have the chance in their ordinary school career of obtaining one of the greatest, if not the greatest, of the advantages of school as opposed to domestic life. This is most important, and in the case of a day school absolutely invaluable. To boys who would have little or no scope for exercising in reality those functions of which they bear the official title (monitors, prefects, &c.), and to others who can never hope to attain those sometimes rather barren distinctions, the corps gives a sphere of control, of social and moral influence, which would otherwise not come within their reach, and would be limited to a very few in a day school where no corps exists. In an ordinary public school the advantages thus conferred are amongst the most permanent results of membership and advancement in the cadet corps.

(3) The corps may admit to its curriculum military subjects outside the ordinary course of drill, and musketry, and field training. These three together with signalling, the various departments of military engineering (a whole education these), topography, telegraphy, and even bugling and drumming, if only the instruction can be adequately organised, form a kind of subsidiary technical training not only of value to the members of the scientific and mechanical sides of the school, but also to the highest classical as well as to the lowest modern boys.

(4) Besides the benefits of discipline, delegation and curriculum, a yet further scholastic advantage is to be found in the addition of an extensive interest to those of school life, the multiplication of which in a sense is a burden, but is also one of the

healthiest developments of the modern English system.

It must be admitted, as has already been hinted, that these advantages, national, scholastic, and personal, are but imperfectly provided by the education of the school corps, if and so long as the number of cadets is not nearly equal to the number of members of the school. As a complicating element in the organisation of a school the corps is doubtless a nuisance, along with many other side departments of education : but no school labours under a disadvantage in possessing a corps; a corps must be an advantage to a school. It is, however, unfortunately true that most cadet corps suffer from great disadvantages in the efficient achievement of the purposes for which they exist. As a general rule, the cadets' military curriculum is not what it should and could be in more favourable circumstances, and it cannot be regarded as entirely satisfactory to those who have the responsibility of carrying it out. There are differences between the requirements of the school and those of the military organisation, and it is impossible to reconcile the conflicting interests of the class-room, the playing fields, and the parade-ground. In a subsequent article, it will be necessary to deal with this particular set of considerations in detail. At this point all that need be said is that, were it possible to include all members of each school possessing a cadet corps in the military organisation, the educational and scholastic advantages of the training would be increased to an enormous extent. Everything which is desultory and scrappy in the curriculum of the cadets would be properly systematised and progressive; and though the activity of the corps would encroach, as it often does, on the time of the work of the school, there would be less dislocation and irregularity in the class-room and preparation, and more efficiency in the corps.

If we have not already learnt the lesson before and elsewhere, Mr. Chamberlain and his opponents have at any rate demonstrated to us now the illusory nature of the argument from analogy and the utter fallaciousness of figures; while the good Bishop of London has emphasised the danger of going into details of cash receipts and expenditure. Therefore I must not be blamed if, on the one hand, I absolutely avoid any deductions of guiding results from the actions and experiences of various schools, and, on the other, I abstain from any but the most vague generalities in indicating some practical views as to the first step in the formation of a cadet corps—the counting the cost. A more conscientious method would undoubtedly be to ascertain as many particulars as possible, to reproduce them here in tabulated statistical form, strike averages, draw conclusions, and await the deluge. As one who has constantly watched, and taken part in the unsuccessful pursuit of the *ignis fatuus* of a MARGIN, I may well be accused of taking too extravagant a view of the needs, in ready cash, of a school which desires to found a cadet corps providing uniforms for say 100 members with power to add to their number; or, on the other hand, I may have quite under-shot the mark. The conditions of different

educational establishments vary so enormously with social status, geographical position, endowment, public support, and the thousand and one things that go to make our secondary schools a collection of separate entities with everything and nothing in common, that it is almost impossible, certainly quite misleading, to argue conclusively from any one to any other. Of this, however, it may be stated with assurance, that in the project of the formation of a uniformed corps of 100 members (the question of the ununiformed will be treated in the second essay) an amount of £250 to £300 should be in hand on formation, an income of £150 a year from cadets' subscriptions, and an additional revenue of £150 for the first year, and £120 a year subsequently from some grant being in sight for the new-born corps. As the corps increases in numbers it will usually be found that the grant, or revenue outside the cadets' subscriptions, should be in the proportion of one-half. The smaller the corps the greater is the proportion of the "grant."

Supposing that a school of 200 boys wishes to form a corps on these lines with all boys members of the corps, it would be easy to consider 100 of them as "probationers" not entitled to the privilege of uniform and charge them a sum of, say, 5s. per term, which would be a valuable help to the provision of more uniforms. The question as to what is to be done with the capital of £250 to £300 belongs more peculiarly to the consideration of the conduct of the corps, to be discussed in the second of these essays.

Having seen the capital and some of the income in prospect, the school authorities have now to decide two important points. There is the principle of voluntary as against compulsory service, which obviously is more easily settled at the beginning of than during the existence of a corps, and there is the question of the possibility and advisability, nay, the financial necessity of the lads over seventeen years of age becoming enrolled volunteers in the corps to which the cadets will be attached. The two things are somewhat connected. If there is compulsory service, it is much easier to work the requirements of the enrolled men. If not, and the financial matter is not pressing, it is better to have nothing to do with enrolment, and to bid farewell to the grant of 30s. per efficient, an uncertain and varying source of revenue, attended by many inconveniences, and possibly at the present moment in danger of abolition altogether. The position of volunteer corps is so uncertain, the Army Council has shown such disregard of the needs and prospects of the volunteers by procrastination and postponement of promised "reform," and of new regulations, that the question of enrolled men were better at once dismissed from the calculations of the school authorities who are contemplating the formation of a cadet corps.

The next matter to settle is to what volunteer corps they wish to be attached, and to make a proposal for formation to the officer commanding that corps. Here, again, if compulsory service be the rule, and there be an opportunity of becoming attached to an engineer corps, that opportunity should

be fearlessly seized. If, on the contrary, there be no compulsory service, and no chance of a large proportion of the school (say 70 per cent.) joining, an infantry corps should be chosen in preference to rappers. There seems to be no sound military reason for cadets to become attached to gunners except as a matter of convenience, no other arm of the service being available.

Boys of twelve years and upwards are eligible, and the minimum strength of a cadet corps is 40. (Vol. Reg., 1901, p. 107, par. 689 to 704.)

It is possible to form a cadet battalion of between 250 and 400 (Vol. Reg., p. 109, par. 705 to 716), consisting of at least four companies of from 60 to 100 each, composed of boys between the ages of 14 and 18. But as the difficulties of finding officers for two companies of an ordinary corps 200 strong are generally serious, it is not recommended that the plunge of a battalion should be attempted. Indeed, it is hard to believe that such a course would be allowed in the present attitude of the permanent officials of the War Office to the volunteer force.

Where a cadet battalion already exists in the neighbourhood of a school, it is often wise to make a proposal for leave to form a company, which, with other companies of other schools, will help to make up a cadet battalion.

In the next article, on the conduct of cadet corps in general, and the formation and conduct of ununiformed corps in particular, it is hoped that some assistance may be given to those who have not yet had experience in school military organisations. In commending the question of compulsory service to the favourable consideration of those who are interested or actually engaged in education, I would implore my colleagues to put aside for a moment those fluid appreciations of difficulty and detail which arise from our habit of correcting exercises, and to endeavour to arrive at some solid generalisation in the bed-rock of principle.

THE INCIDENTAL TEACHING OF ENGLISH LANGUAGE.

By NORMAN L. FRAZER, B.A.
Whitgift School, Croydon.

IT is my wish in the present article to confine myself to a very minute and well-defined portion of the vexed and varied problem which is becoming more and more familiar to us as "The Teaching of English." It is not claimed that this portion of the subject is more important than others, and it is certainly not more interesting; in fact, for my own part, I am convinced that the teaching of language must always play a second part to the reading of literature; but the questions to be considered from the linguistic or grammatical point of view do in the nature of things allow of a more concrete and definite solution than those which are concerned with literary judgment and appreciation. So far as we schoolmasters are

concerned, there are many preliminary problems to be tackled before we can hope to arrive at any authoritative opinion on the best methods by which to secure what, after all, is the object of everyone of us, the intelligent and pleasurable reading of our great literature. In the very forefront of such problems will be a definite conclusion, based on sure psychological grounds, as to the content of the literature which is to be offered to the various stages of the pupil's development.

But to return to our immediate and far less pretentious task. There are probably few of us who have not derived such knowledge of English grammar as we possess from one of two sources; we have either been taught by way of a foreign tongue—no doubt on the *solvitur ambulando* principle—or we have learned the contents of a text-book of English language, so-called, on the *lucus a non lucendo* principle. Of the advantages claimed for either of these methods, or for their obvious disadvantages, I propose to say nothing, any more than I propose to argue that the adequate teaching of English language is in itself desirable; that I am content to take for granted.

The third, and, as far as I can see, the only feasible method of teaching English grammar is that laid down by the Board of Education in its much-discussed syllabus. It will be remembered that the Board required schools to submit a course of English, providing among other things a "*suitable graduated series of exercises (repetition, meanings and use of words, analysis, including parsing, paraphrase, abstract or précis, composition or essay) connected with the language and subject matter of the text.*"

It would be idle to pretend that very plausible arguments have not been put forward and ably maintained against the principle here laid down. It has been said that the mere connection between such diverse things as the teaching of grammar and the appreciation of literature must conduce in the mind of the pupil to a disgust of literature, that paraphrasing is another word for desecrating, that repetition is a mere unreasoning survival of an exploded method, that *précis* is a deliberate introduction of the commonplace into the realm of art and fancy, and that parsing is the very abomination of desolation. I am inclined to think that the greater includes the less, and that, if their first point be proved, nothing else matters. But I cannot help thinking that the disgust ascribed to the pupil arises from a dim and distant reminiscence of very different conditions, and that this disgust of grammar and all its appurtenances is a very potent argument against the old system under which we were trained and not against that now proposed. It is always unfortunate that when we make a mental analogy with the "pitch that defiles" we reserve to ourselves the right to say what is pitch and what is not.

It is curious, however, that one of the cardinal and universally accepted features of the so-called reform method of teaching foreign languages is precisely this, that grammar shall be taught incidentally, and deduced from experience and actual reading. It will be maintained, no doubt,

that the aims in view are very different in teaching a foreign and the mother tongue. I submit that in the early stages the difference is far more apparent than real, and that the ultimate aim is identically the same. But then, much that has to be discovered in the case of the foreign tongue is already intuitively known in the mother tongue. That is true, and appears to me only to prove that the formal teaching of English grammar is, after all, if reasonably conducted, by no means the bogey it is made out to be, and demands, in comparison with the study and appreciation of literature, but a small amount of time. Again, is it admitted or not that boys trained on the reform methods appreciate their French, as such, incomparably more than their predecessors who had their grammar kept distinct from their reading? Till that can be denied, I think we may claim more proof that reasonable attention to grammar tends to disgust pupils with literature.

It may, however, be pointed out that the more formal and mechanical groundwork of the language will be disposed of fairly soon, and that it will hardly be necessary to make a passage from "Hamlet" the subject of a formal parsing scheme. But that the sublimest passage that Shakespeare ever wrote is going to lose anything in the mind of a pupil mature enough to appreciate it at all, by being subjected to a logical examination and analysis, I, for one, cannot admit. On the other hand, I feel that a dissection of the structure may be the best basis for analysis of the thought, and that without it—however painfully disguised by a timid recourse to the informal—the foundations of literary criticism cannot be taught at all. The Board of Education, at any rate, can hardly be accused of a pedantic or obscurantist attitude in this matter. After speaking of the exercises, to which I have already referred, arising from the text, the Board expressly says: "It need hardly be said that not all the exercises here suggested should be used in each month or even in each term; but each should be used from time to time."

Many of the most enlightened teachers have a loathing for the word "paraphrase." To tell the truth, the word's associations are unfortunate. It has too often been interpreted to be synonymous with "alteration." More unfortunately still, it has been the victim of the process called "thorough." Because the immature mind called upon to paraphrase a passage has through sheer ignorance *altered* every component word of that passage, his luckless and decried effort has paradoxically gained the credit of doing that for which he is being laughed at for having failed to do. His periphrasis is held up to scorn, but it is never even hinted that it is in no sense a paraphrase. The conventional argument is that the paraphrase is a deliberate temptation to the pupil to substitute his own bald and unskilled language for the finished beauty of the master. But there are one or two objections that may well make us hesitate to sacrifice some solid gains to the indefinite demands of plausible shibboleths.

In the first case an intelligent paraphrase necessitates the attempt to comprehend the central idea of the passage. It is astounding to find what a boy of average intelligence takes for granted in the matter of comprehension. He will tell you in all honesty that he finds no difficulty in what subsequent investigation proves to have conveyed absolutely nothing to him. And this occurs at all stages. Then it may be surely suggested that the very process of the paraphrase—and let it be noted that the paraphrase is chiefly useful with the poets, and that mere translation into prose order may be a very suitable paraphrase—helps to rivet the reader's attention to the style of the original. Style is notoriously a difficult subject to handle, and apart from imitation—a very excellent exercise if interpreted liberally—I know of no mechanical help so useful as the paraphrase. And lastly, it may be contended that the paraphrase affords the best of means for acquiring a literary vocabulary. In fact, it seems to me that, so far from paraphrasing exerting a degrading and demoralising effect by marring the beautiful, it would be more reasonable to contend that it gives the immature student one of the best opportunities for acquiring a beautiful vocabulary, modelled upon a finished style, with the extra advantage of working in a restricted medium of ennobling ideas. It is perhaps here necessary to say that the extended use of oral work in the mother tongue would dispose of a good many objections to the methods under discussion.

But, after all, it is a poor theory that cannot be bolstered up on paper, and all theories, in teaching at any rate, have much the same value till tested and applied in the class-room; and even there they must have natural and not artificial accompaniments. If a boy has been left till the age of twelve without a suitable introduction to English grammar, and is then asked to read such texts as are suggested by the Board of Education in its rough outline published last year, it would be a little hazardous to expect to apply the incidental teaching of grammar with very satisfactory results. The results would probably be about as disappointing as if the grammar were to be taught concurrently but independently, as under the older system, or were not to be taught at all. But it is much to be hoped that the principles now advocated have been followed from the time when the pupil first had a reading book put into his hands. It was then possible, without the risk of disgusting the poor victim with fine literature, to deduce, in approved laboratory method, such simple distinctions as the several functions of the parts of speech. If it be distinctly kept in view at all stages that nothing is to be learnt which is not likely to be applied, we shall steer clear of both cram and artificiality; and it is precisely these two dangers that the incidental teaching of grammar will naturally avoid.

There is, of course, another suggestion which has only to be mentioned to be scouted. It is that, instead of good literature supplying the basis for the study of its own structure, literature so-called

should be composed to illustrate the operation of grammatical laws.

It is, I know, thought by a great number of teachers, and those not the least keen, that all our teaching is evolving itself into a glorified incidentalism, and that we shall end by teaching everything in terms of everything else. But in English grammar, at any rate, things need not come to such a pass, for the wise teacher will always give his pupils some simple text-book which will codify all that they have been able to deduce from their own experience, and will at the same time serve as a reference book and a convenient manual for revision. Instead of pursuing arbitrary schemes of parsing, older pupils will doubtless derive more benefit from studying the main principles of historical grammar, especially if their course of reading should happen to be arranged chronologically.

It is unfortunate that in the past the teaching of English has not been sufficiently associated with the teaching of modern languages generally. The root principles that should govern the teaching of all languages are the same, but it would be hazardous to maintain that the principles now generally accepted in the teaching of French and German have been applied at all whole-heartedly to the teaching of English, as will be recognised at once by considering the present systems in vogue for teaching English composition. But the consideration of composition teaching would carry me beyond the limits of my present purpose, which has been to discuss the possibility of the incidental teaching of English grammar without sacrificing the higher ideal of inculcating appreciation of English literature.

PRACTICAL SCIENCE INSTRUCTION IN IRISH NATIONAL SCHOOLS.

(FROM AN IRISH CORRESPONDENT.)

TO discuss intelligibly the present standing of practical science instruction in Irish National Schools, a retrospect is necessary.

During the last few years developments in primary education in Ireland have been rapid and interesting. The Results system, which had held the sway since the early 'seventies, was abolished in 1899. But, unfortunately, the effects of the system still remained; and Irish teachers, reared in the stupefying atmosphere engendered by such a system, were at first unable to understand or take advantage of the new conditions.

It is unnecessary to describe in detail the system referred to, or to elaborate its inherent defects; suffice it to say that in Ireland, under this system, a common school programme with the same essential subjects and the same requirements for each standard, was in force all over the country. The use of the same reading books and text-books, many of them obsolete and some of them dating from the inception of the National Board, was

officially insisted upon. The underfed, half-clad child, who worked half the week in a mill and attended school the remaining half, learned from the same text-books and was subjected to the same annual examination tests as his more fortunate fellow who had all the advantages of home comforts, and who attended a school better equipped in every respect, and staffed with teachers of superior attainments and capacity.

These are some of the evils, now only too apparent, of the Results system. And yet on paper some of its advantages look well. The list of extra subjects which might have been taught, and commanded high fees, is a formidable one. We are not sure whether Sanscrit is to be found among the languages appearing there, or whether palæontology figures among the sciences. In actual practice the list of extra subjects became a very short one indeed. In the comparatively few schools which attempted extras, freehand drawing, singing, book-keeping, algebra and geometry were the favourites. Not many schools attempted more than two of these; the teaching of languages, either ancient or modern, can scarcely have been said to exist; and the teaching of science in any of its branches and with all the imperfections of method attaching to blackboard science instruction was, so far as we can find, almost non-existent. That the country was in the main agricultural was to some extent recognised. *Practical Agriculture, taught from a text-book only*, was compulsory in rural schools and optional in town schools. The largest proportion of fees was earned by the street arabs of one of our largest cities—children entirely ignorant of farm operations, who would have been hard beset to distinguish a plough from a harrow!

In a large number of schools arithmetic was the most valuable school subject, but the higher standards were entirely concerned with its commercial branches—with interest, discount, stocks and shares, and so on. The *rationale* of the rules was not required; mere mechanical methods were all that was necessary. Napoleon spoke of our country as a nation of shopkeepers, and it would seem that Ireland, at least, was destined to become a nation of book-keepers. Under the Results system any education the pupil received beyond the mere rudiments was entirely bookish and unpractical.

As regards the teacher, there was no room for initiative or enterprise on his part; indeed, he could have dispensed with rational teaching altogether, provided that *by any means whatever* the pupils acquired a parrot acquaintance with the subject matter. Real teaching received no adequate official recognition or remuneration. Truly the times were ripe for a change.

In the quiet revolution of 1900 the most important agent, because the most far-reaching in its effects, was the introduction of practical science teaching. The scheme introduced and the methods followed are those which originated with the British Association, a scheme which may be said to have for its watchword the term "heuristic."

We do not propose to give the full connotation of the term, but in heuristic teaching the method is all important, and the great aim is to teach science in a scientific way. The mental attitude of the learner is that of a discoverer; he is taught to make simple researches, to raise relevant problems on the line of march and to appeal to experiment for their solution. Each pupil keeps a carefully-written and independent account of all work done.

Let us look briefly at what teaching of this sort implies. The pupil must be able to bring together the threads of the problem—the data, so to speak. Then, when the difficulty to be surmounted is clearly formulated, he collects the facts derived first hand from practical experiment, weighs and considers these, and so infers the answer to the query. Every experiment is undertaken to solve some definite problem, and the experiments themselves are linked together in logical sequence. It is not difficult to see the educational effects of such teaching as this. The pupils are taught to think for themselves, to formulate and grapple with problems successfully; initiative, resource, independence, accuracy are cultivated, and, incidentally, a high level of English and arithmetic is maintained *pari passu*. Are not these the qualities in which teaching under a Results system is distinctly lacking, qualities which any subsequent system must aim at cultivating in order to be successful?

As in any system of teaching the teacher himself is a determining factor, how is the teacher affected in this case? He is supplied with methods approved as the best by the highest educational authorities, and he makes the acquaintance of these methods not merely in theory but in practice. He becomes possessed of a new weapon he can wield successfully, which he will use not merely in the teaching of science, but in the teaching of all subjects. His horizon is widened, and he approaches a subject with a better grasp and a deeper confidence.

The teaching in the past has been heterogeneous and unmethodical, often without method in the true sense. The teacher has been so restricted under the old environment that the qualities which characterise a good teacher have been atrophied. Practical science is a subject treated so that it will act as a corrective to all these ills, supply a method essential to all true teaching, and mould the teacher so as to bring out his most sterling qualities. It is a remedy in which the highest physicians have every faith. The layman (as distinct from the educational expert), the consideration of whose interests in things educational is enforced by the necessities of the times, gives, we know, ready assent to a full trial of this remedy.

The Irish educational authorities seemed to assent equally readily in 1900. They secured as head organiser the best exponent of the new light procurable. A staff of eight organisers, fully trained by him, was set at work throughout Ireland under his immediate and close supervision.

These organisers conducted day and evening classes in various centres, attended by the teachers

of the district. A practical exposition of the course was given; the teacher after the lesson worked through all the experiments concerned, recording a full account of each experiment in a special notebook, noting besides the thread of the lecture and any remarks relating to the actual teaching of the subject. In short, he wrote his own text-book showing fully both the matter and the method; and what other book could be anything like so valuable and helpful to him?

It was the duty of the organiser to see that the work of the classes was done in the best possible style; that neatness, accuracy, expedition, cleanliness, &c., were duly observed; and that the broad, comprehensive view of the subject so essential to its proper handling—its applicability to the solution of problems, its completeness as a logical whole, its utility in cultivating habit and moulding character—should never be lost sight of. When not fully engaged in conducting classes, the organiser visited schools, teaching lessons and assisting the teacher in every way possible.

It may be mentioned that not more than twenty-five teachers can be taught with profit at a class; and that forty-eight meetings of three hours each constitute the *minimum* time necessary for working through the course. Usually the course was taken in two sections; the organiser dealing with the first half only, postponing working through the second half for a year or two. Assuming that a class met once a week, and that the organiser had a class each day, he could train 300 teachers in a year in the first half of the science course. During the four years the organisers have been at work, 40 per cent. of the teachers have gone through the first half of the course, and 5 per cent. have completed it.

But unexpectedly, and against the wishes of the country, this highly useful work has been almost stopped. Since March 31st last, the staff of organisers has been cut down from eight to two, and no money has been reserved for the holding of teachers' classes as heretofore. No person who gives the subject a moment's thought would expect that with the means available the huge task of training the teachers of Ireland—some 12,000 in number—could have been accomplished in four years. Yet the plan of organisation followed has been not merely successful—it has worked like a charm. But in spite of these considerations, and for no valid reason, the work has been practically stifled. The one great regenerating influence in Irish primary education can no longer make itself felt with any effect. Surely even national economy can be carried too far? At least, it seems an unwise policy to discourage first just that expenditure which the best judges maintain will improve the position of the Empire and increase the country's resources.

MR. P. A. BARNETT has been appointed to the newly created post of Chief Inspector of the Board of Education for the Training of Teachers.

THE BIOLOGICAL SIDE OF NATURE-STUDY.

II.—ANIMAL LIFE.

By OSWALD H. LATTEF, M.A.
Charterhouse.

THE interdependence of the animal and vegetable kingdoms is so close that it would be possible to draw up an adequate programme of work by limiting our attention to those animals which are to be found on or in the trees with which we dealt in our previous article. Within the confines of the strip of country there suggested it might easily happen that examples of every one of the main orders of animals would be found; and though classification and systematic zoology should not obtrude conspicuously into nature-study, yet it is well that clear ideas should be gained as to the meaning of such terms as "mammals," "insects," "spiders," and the like. It is a good exercise for each pupil to collect a few animals, say insects, as to whose systematic position he entertains no doubt. An examination of the external characters of each specimen will show what features are possessed in common, and thus a fairly accurate definition of "insect," "spider," or whatever group it be, will be obtained.

But the main purpose is rather to ascertain how each animal lives, and moves, and has its being; function and structure must be studied *pari passu*, and precedence given, if at all, to the former rather than to the latter. In the case of many animals it is a necessity that they be kept in captivity in order that their behaviour and mode of life may be carefully observed. This fact induces me to offer two cautions: do not forget that no animal can be completely understood except when considered in relation with its natural environment; and do not allow the keeping of animals to degenerate into mere sentimental and unobservant keeping of pets. For example, many boys, miscalled naturalists, delight to keep caterpillars. Their attention to these "pets" consists of more or less regularly supplying fresh food and cleaning out the breeding cages; their object is to add to their cabinets a few more specimens impaled on pins; their usual subsequent conduct is to lose all interest in their *quondam* hobby, and to offer their collections to some museum—to the great embarrassment of the curator. It is not a little remarkable how very many quite young children of both sexes take a keen interest in animal pets of one kind or another; nor is it surprising that as a rule their interest flags and eventually perishes, for they have not been encouraged or led on to think and exercise their intelligence, or, indeed, to perceive the problems before them. It seems to me that in this general early love of animals we have the starting-point of nature-study, and that by judicious questions and suggestions a delightful hobby may be provided to many, life's work to a few, and a quickening of the faculties to all.

Let me illustrate my meaning by a series of questions that may be asked concerning the life-

history of some common insect, say the Tiger Moth. It is obvious that the enquiries may be begun at any point in the life-cycle of the animal, and, though it is perhaps more philosophic to begin with the egg, we will here start with the caterpillar (Woolly Bear) when nearly fully grown, for it is at this stage that it is most usually encountered. Of what value are the long hairs with which the body of the caterpillar is covered? What effect do they produce upon the human skin? By what birds, if any, is the caterpillar attacked? Do frogs, toads, lizards, birds, and insectivorous mammals eat it readily, or are they deterred from doing so? What does the caterpillar do if it is touched or in any way alarmed? Do any animals other than insects behave and protect themselves in a similar way? On what does the Woolly Bear feed? At what time of day does it take its meals? How does it move its jaws in biting? Is the leaf attacked in any particular way, so as to make it possible for us to recognise plants on which this animal has been feeding? What is the weight of the caterpillar? About what weight of green food does it consume *per diem*? How does the animal move along? How many legs and how many claspers does it possess? To what different uses does it put these two sets of limbs? From which segments of the body are limbs entirely absent? Is this the case in all caterpillars of moths and butterflies? How does the mode of locomotion differ in various caterpillars in relation with the number of limbs? At what rate does the Woolly Bear walk? How long would it take to travel a mile at this rate? Compared with other caterpillars, is it a slow or a rapid walker? Of what value is this peculiarity? When and where does it prepare to turn into a chrysalis? What sort of a cocoon is made? Whence does the silk issue? How does the chrysalis compare in respect of size with the caterpillar? When does the moth emerge—at what time of day and at what season of the year? What changes take place during the first hour or so of the life of the moth? How soon is it ready to take flight? By what mechanism are the fore and hind wings held together? Of what value is the colour of the moth? Is the animal thereby concealed or rendered conspicuous in its natural habitat? Does the moth feed at all, and if so, on what substances and by what means? What differences are there between the male and female individuals? What reasons can be discovered for these differences? When and where are the eggs deposited? are they placed singly or in batches? How soon do the young caterpillars hatch out? How do they differ in appearance and in habits from the fully-grown caterpillar? How many times does the caterpillar change its skin in the course of its life? Do its colours and general aspect change at each moult, and if so, what is the value of the changes? Are the caterpillars attacked by any parasites? If so, how do these animals approach their victims, and where do they deposit their eggs?

These are but a few of the points to which

attention may be called; the list of questions might easily be doubled. Many of the lepidopterous insects are admirable subjects for experimental work in connexion with their powers of adapting their colours to those of the surrounding objects. Comparatively few species have been investigated in this respect; and inasmuch as the method of experiment is simple (as is explained in my book, to which reference was made in the previous article), the whole subject of insect coloration appears particularly well suited to the needs of teachers of nature-study.

Aquatic insects form remarkably good subjects for study. Many of them can be reared in shallow dishes and soup-plates, and are thus easy of observation; at the same time there are many species sufficiently large to render much of their economy and structure visible without the aid of a microscope, though, of course, the use of this instrument is always desirable. To those who can readily procure such animals I cannot do better than recommend Prof. Miall's charming book, "The Natural History of Aquatic Insects" (Macmillan).

I have myself found burrowing animals a rich field of interesting work. An enormous number of animals dig holes in the earth, or in bark, or wood, or in masonry. Large examples will occur to most people, but probably few realise that at the seaside there are commonly to be found boring sponges, boring sea-urchins, boring worms, boring molluscs, and others; while on dry land there are the earthworms, numerous beetles, bees of many species, the sand-wasps and their relatives, some of the true (social) wasps, ants, spiders, and many more. In every case we may ask, Why does the animal make a hole, for itself or for the protection of its offspring? by what means is the hole made? how is it protected from enemies? does the animal possess any special modification of its limbs or of its body to enable it to dig the hole and to clear out the loose material? If the hole be made solely for the benefit of the offspring, we have further to enquire, What provision is made for the sustenance of the young? How is the food collected and stored? Does the parent lay up at the first an adequate store and take no further interest in her progeny, or does she continue to supply food at frequent intervals during their growth? How does she find her way back to the hole when she has been foraging? Does she appear to take note of the objects around her burrow, and does disturbance of these in any way incommode her? What means does she possess of defending herself and of escaping from enemies? How is she coloured, so as to be conspicuous or otherwise? Is she mimicked by any other animals which have not her means of defence?

Such studies as these very naturally lead on to the consideration of animal societies and the architecture of their dwellings. Nests of ants, confined in a small glass case, can now be procured for a few shillings, so that the insects can be kept in the house and examined at will. The ants are so tolerant of captivity that a colony may without difficulty be kept for several years in a thoroughly

healthy condition, and the greater part of their social organisation ascertained by direct observation. Similarly, "observatory hives" of honey bees, though requiring more skilful management and a greater outlay (unless they be home-made), are an excellent adjunct to the other branches of work; and if the systematic watching of a wasp's nest while the occupants are still in being is too much for the nerves, at any rate there are few insect-homes that more fully repay careful examination after all cause for uneasiness has been removed. I may here remark that, though the main facts of wasp economy are well known, there are nevertheless at least two fairly common parasites upon them, the one a beetle and the other a thread-worm, whose life-histories are still riddles awaiting solution.

Birds are invariably favourite subjects, and the prejudice in their favour can perhaps best be turned to good account by the encouragement of the formation of bird-diaries. Primarily these diaries should contain records of all the birds that are noticed to occur in the locality at the various seasons of the year. Notes should be made of the arrival and departure of migratory species, and in connexion with these there should be kept an accurate record of the weather, especially of the direction and force of the wind, and of the clear, cloudy, or misty condition of the atmosphere. The diaries may be extended to include enquiries into the relation that exists between the structure of various organs, such as the beak, foot and wing, and the food, habits, and mode of flight of some of the more common species.

Birds'-nesting and the collection of eggs is a branch of natural history that is liable to grievous abuse. I do not go so far as to say "forbid it," for I believe that many a first-rate naturalist, in the best sense of the word, has laid the foundations of a real love of nature in the perhaps somewhat thoughtless birds'-nestings of his boyhood. But do not let there be any encouragement to indiscriminate collecting. There is yet much to be learnt about the habits of many of our most common birds. How long do they take to build their nest? Do both male and female birds share in the work? Do they ever get their friends to help them? How long is the period of incubation? (on this point we have very little exact knowledge). Are the young naked or covered with down when they hatch from the egg? How soon do they become fledged? When do they leave the nest? Is the plumage of the young different from that of the adult, and if so, how soon is the adult plumage acquired? What reason is there for the difference? On what are the young birds fed? Is the food of the old birds of the same character? A host of other questions are ready to hand, but space forbids to enumerate all. If such points as these are put before the birds'-nester, it at once becomes more interesting to leave the nest undisturbed and to keep it under careful observation; and it is difficult to believe that the person exists who can find it in his heart to molest in any way the animals that have given, as they are

bound to give if really studied, so much pleasure and delight. If some tangible memento must be had, photography may perhaps fill the void left by the suppression of the egg-cabinet.

I have touched on but a few of the many animals that are easy to find and to use for the purposes of nature-study. The problems of animal life differ only in details; for to every animal, from the day of its birth to the day of its death, there is ever present the need of feeding, breathing, escaping its foes, and rearing progeny to carry on the life of the species. If nature-study is begun by the endeavour to know the life of one plant or of one animal, it will inevitably and automatically lead on to wider and wider investigations, as the lines which radiate from the centre of observation are followed into the surrounding network of organic life.

STUDIES IN SCHOOL MANAGEMENT.

V.—CORRECTION OF EXERCISES.

By J. W. JARVIS.

St. Mark's College, Chelsea.

THIS is a serious and difficult part of a teacher's duty. It is serious because ill-corrected exercises fail to remove the pupil's misapprehensions, and written work remains as evidence of duty only partly done. It is difficult because it is monotonous, it seems never-ending, and it is generally undertaken in the teacher's leisure hour. From the nature of things this burden cannot be entirely removed; how, then, may it be lightened?

Consider very carefully what exercises you set your pupils. Do not give them *carte blanche* to fill leaves of books or sheets of paper, for they certainly will. Require only their best thought and steadiest work on paper, and, since you are a partner in the business, you can fairly demand this from them. Remember, it is a fine mental discipline to have to think over your thoughts before committing them to paper, and so the first piece of practical advice which can be given is

"LIMIT THE OUTPUT."

And yet, paradoxically, insist upon the pupil doing more written work. All lessons, to be effective, must be followed by a form of application. Herbert insists upon this by making it the Fifth of his Stages of Teaching, and Captain Cuttle sententiously warns us that the "bearings of this observation lays in the application on it." The pupil, then, must write much, must solve problems, must draw maps and sketches, must make *précis* and must generally commit to paper his ideas. But must all this be marked word for word by the teacher? No. For all this work a general supervision only is necessary; such a supervision that will inhibit carelessness, thoughtlessness and idleness, and under which the pupil will feel bound to produce his best work. To effect this the teacher

should not turn to other matters when the scholars are so occupied, and he is advised to refrain from making this an opportunity for transacting business which may properly be done at another part of the day. These exercises can be very conveniently looked over whilst they are being performed, and signed or dated at the time. Only a part of the class can be inspected on this occasion; the next lesson the remaining part can receive attention, and though the pupils are called upon to do much, no arrears of marking should be left over for the teacher. To this general rule may be added a little advice. Be very business-like in the transaction, remembering that your object at this period is to correct, not to explain; and plan the marking so that it can be accomplished with the least effort on your part.

MATHEMATICS.

Now, having preached, let us practise, and begin the day's work. The Form is busily occupied with arithmetic, and each pupil is working exercises as the sequel to some oral teaching which has gone before. To test whether the rule is clearly grasped by the class, examples are dictated or written on the blackboard, and a certain time has been allowed for their solution. All stop, and the teacher rapidly passes round the class, marking each sum right or wrong. If the result of this correction is satisfactory, then the pupils may be set to work from books and the answers called out near the conclusion of the lesson, each pupil, of course, checking its own result. Do not call upon them to check each other's, else you reduce the chances for the development of moral strength for which every school should provide. On your part do not unduly praise those who have done many correct, nor unduly blame those whose progress has been much slower. In your passage round the class take the opportunity of looking into the working of the sums from sample books at hazard, in order to make sure that the steps are clearly understood and properly applied. Arithmetic and algebra may be considered exercises which should not require inspection after the class has gone. Solutions in geometry necessitate other methods. After proposing a problem, some minutes should be given for due consideration by the class with pencil and paper, and specimen solutions should be worked on the blackboard. There is no reason why these efforts should be inspected by the teacher, nor can any teacher be fairly expected to guarantee that all in a class can come up to the same standard of proficiency in this subject. The indolent or thoughtless should be called upon sufficiently often to prove that they also have contributed some thought to the solution of the question in hand. So much for ordinary class-work in the mathematical subjects. An examination paper in these is a different matter. Suppose your pupils have worked a paper in arithmetic or algebra as a more formal test, then this must be marked by the teacher apart from the class, either at home or in those school hours when he is not actually teaching. The teacher is recommended to work the sums

himself first, and this can be done while the pupils are also solving the questions; so that when the actual marking takes place no time is wasted in getting ready; the answers are prepared, and the value attached to each correct solution is clearly stated. This value should be arranged as a fraction, the numerator representing marks for intelligence in method, and the denominator the amount awarded for a correct answer. These papers should always be returned to the pupils, who may be then called upon to work the exercise correctly or to adopt more intelligent methods in their processes. If the same sum is generally wrong throughout the class, a careful inspection of a few papers in detail will probably reveal a misconception common to all, which the teacher can remove by fresh instruction. All teachers are keenly interested in marking exercises if they feel some real good to their pupils will be the result of their labours.

Examples in geometry are more difficult to deal with. Here the whole work of the pupil must be carefully read and the fallacy in the reasoning noted. Beyond this it is not necessary to go. As soon as the false step is reached, correction ends and the mark for the amount done correctly can be assigned. Teachers have been known to read the whole mass of wrong work through, an unnecessary proceeding in what is, after all, an exercise in logical thought. An odd hint or two, however, may be useful. Never set long exercises in geometry; insist on all proofs being written in short lines—a line for each step; all references should be given at the end of the line and arranged as nearly as possible under each other, and all the letters used should be in Roman capitals, thus, ABC , XYZ , and the letters should be kept upright, thus M , not M , nor ABC . A special training in the art of writing out a geometrical proof will be fully repaid by the ease with which the exercise can be marked.

LANGUAGES.

The class now passes to the language lesson, and in this we have three forms of exercise to consider. First, lists of words or phrases, plurals, genders, agreements, declensions, or conjugations, to be written out as final tests of knowledge. Secondly, the translation of the foreign language into an adequate English form, and thirdly, the correct expression of English in a foreign language. The first of these may be made a class exercise, marked in the presence of the class and by the pupils themselves, the teacher only inspecting samples. Errors made in these exercises demand from their nature correction at once, and as the answers can all be found in the text-book, the teacher should put upon the pupil as much of the responsibility as he safely can. Translation into English requires the personal attention of the teacher, who is not recommended, however, to practise that interlinear correction which Mr. A. C. Benson refers to as absorbing so much of the Eton master's time. In this difficult task the problem is to arrange the output, that when a number of exercises are sent in a fairly accurate standard of correctness has

already been reached and so the mechanical task of correction is reduced. Call upon the class to translate a sentence or two of the language into English, write this upon the blackboard and comment on the construction and equivalent words as the exercise proceeds. Then the pupils should be asked to write a similar exercise on paper, and these should be corrected in class. A few may be chosen at hazard, but care should be taken that all the class is called upon within short periods. Until the more elementary blunders are cleared away by a process like this, it is useless to ask for a long exercise in translation. Great importance should be attached to the pupils reading their own work out aloud, the ear detects awkward expressions, *gaucheries*, and such like, which an organ not dealing with sound passes over. This method will not apply to translations from a foreign tongue, and the teacher's pencil can alone be relied upon. A scheme, however, which has succeeded very well may be outlined here. The teacher works the exercise upon the blackboard by the help of the pupils who have previously written it at home. Their books lie open in front of them, and as their mistakes are revealed by the correct form upon the blackboard they place the right word between the lines. The boys often suggest alternative expressions which the teacher discusses and adopts or rejects, and when all is done the exercise upon the blackboard is read aloud, special attention being paid to difficult phrases, idioms, and words not easily pronounced. By this method much correction is done in class, and there are no arrears left for the teacher to deal with. The words of Prof. J. J. Findlay are well worth quoting in this respect. "No correction, so called, is worth much which falls short of 'correcting' the pupil's errors, actually seen to be such by the pupil, and really set right by him. We must certainly at times devote some labour away from our class in revising their written work; but we ought to arrange that every mark of correction we make shall involve for the pupil at least double the time in thinking about the correction, and, what is more important, *doing* something to repair the error."*

DICTATION AND COMPOSITION.

The marking of a Dictation exercise should always take place in class and by the pupils themselves, the teacher supervising samples to see that the work is fairly well done. Do not make an effort to deal with all the mistakes, and be sure in attempting the correction to see that the pupil obtains a *visual* memory of the difficult word. It may be superfluous to add that in no circumstances should a word mis-spelled be written on the blackboard for all to see.

Composition is an exercise which requires the personal correction of the teacher out of class time. Though the task is a difficult one, there are alleviations. The teacher need only cross out the blunders in composition, and the more obvious ones in spelling. The corrections are best dealt

with in class in a general talk upon the exercise afterwards. The point is to hold up excellent models for imitation rather than a painful endeavour to correct the faults which have been made.

SCIENCE NOTE-BOOKS.

Science note-books, especially those which are compiled in the laboratory, should be marked in the laboratory in the presence of the pupil. He is a very active partner in this business, and his presence during correction should be insisted upon. If the teacher carry round with him the best sketch of the apparatus or a specimen exercise thoroughly well done, much of the trouble of correction is saved, for boys and girls are imitative creatures and will always do better work from seeing a good model than from advice and warnings from corrected lessons. It is, moreover, a good plan to give a short sketch at intervals during the year of the plan upon which the notes should be based. This can be put upon the blackboard—not to be slavishly adhered to, but to give the pupils an idea of correct statement and arrangement. The wise teacher is one who takes much pains at the beginning in order that he may have less correction towards the end. Indeed, this may be taken as a criterion of success or failure in work. If the teacher find that as the term goes on the amount of work to be corrected grows apace, he has probably omitted some necessary precautions earlier in the course, a matter he should endeavour to remedy at once. We again recommend the plan of asking the boys to read their notes *aloud* to the teacher.

DRAWINGS.

Drawings, sketches, plans, and designs call for a special form of marking which should not be represented by actual numbers. Pupils do not compete in these subjects. Each is supposed to do his best, and manipulative skill should be reckoned as an individual rather than a class question. The master will examine and correct the sketches as they are progressing: to some he will give words of encouragement, to others rebukes and warnings, but let him be scanty of the latter if he want the best work. A bad drawing may be a very good effort on the part of a poor draughtsman, a very good drawing may be an indifferent effort on the part of a more skilful pupil, and so a class assessment does not always represent a true statement of the case. Of course in an examination marks should be awarded, and this must be done after the exercise is completed.

EXAMINATION PAPERS.

Some final words upon the marking of examination papers. To all to whom this task falls, we say: Face the batch of papers in earnest and uninterruptedly. Do not let it drag—nothing makes the chain lengthen so much as doing a few at a time. Prepare your scheme of answers and marks so that your standard is not likely to vary and do not overwork the human machine. Get some

* "Principles of Class Teaching." J. J. Findlay. (Macmillan.)

vigorous exercise at intervals, if it is only walking rapidly round a few streets; do not allow the work to creep into the later hours of the night, and, above all things, avoid correcting in railway trains, stations, and waiting rooms, and such like places. Geniuses can do all these very well, but for this class this article was not written. To get more time, a good plan (if the organisation of the school permit it) is to group two classes together for examination purposes, and thus free a form teacher for a morning which can be spent in correction, the attention of the other being given to supervision. This is shared alternately, and it serves to lighten considerably the load of papers to be carried home. May we be permitted to sum up the matter?

Restrict the output to the best work only.

Retaliate on the pupil by insisting upon his taking at least double the time in thinking about the correction than it took you to make it.

And throughout the term mark as much as you can in the presence of your young friend, whose industry and zeal you so much admire and commend.

FOUNDATIONS OF EDUCATIONAL SCIENCE.

By PROF. J. J. FINDLAY.

AFTER some years mainly spent in the absorptions of professional practice, I have reverted to the task of training teachers, and am impressed as much as formerly with the importance of aiding the student of education to "systematise" his thoughts. The lecturer stimulates his students to this effort by exhibiting his own mind at work, and he does not hesitate to exhibit himself as a learner, ever re-shaping his "system" as new experience and new investigations clear new paths. The following paragraphs have been written out as an exercise in this field. They constitute an introduction which in detailed exposition might occupy six or more lectures, but if properly handled by discussion, interchange of views and reading would fruitfully keep students and lecturer engaged for twenty hours. I do not give references to literature, for if one begins it is difficult to stop, but any reader who is following the current literature of education will recognise the sources of some of the waters which flow in this stream; but some of the new tendencies in education are scarcely yet fixed in book form.

THE SCOPE OF EDUCATIONAL SCIENCE, BEING THE FIRST SECTION IN A SYSTEMATIC REVIEW OF THE PRINCIPLES OF EDUCATION.

CHAPTER I.—The popular view of education contrasted with the systematic or scientific. The latter demands an acquaintance with various

related sciences which supply data, some descriptive, some normative.

First, biology, leading to physiology and genetic psychology. The facts of life (animal and human alike) present phenomena which in turn exhibit laws of behaviour.

Secondly, sociology, ethics and politics offer another group of data which are closely related to those offered in biology, but are distinguished from these by the emphasis laid (1) upon the social aspects of human life; (2) upon the place of ideals, moral and religious, as a factor in human development; (3) upon the aspect of education as an elaborate process conducted in civic institutions, whose teachers are a profession, fulfilling duties in the body politic. After a review of these data, a definition of education may issue as a foundation for a systematic structure of thought upon every branch of education.

But since these foundation sciences are in themselves among the most difficult branches of inquiry, the student cannot hope in his first experiences to gain an exact and final grasp of his study in a year or two. The aim of such lectures as these is rather to promote habits of systematic thought, so that the structure called educational science may shape and reshape itself in the mind as experience and study present new opportunities.

CHAPTER II.—*The Contribution of Biology*—(a) The fundamental conceptions of life as "development," and as adjustment; (b) The distinction between the adult (self-sufficing, independent, caring for offspring) and the infant, the minor.

This distinction differentiates two fields of "educational" activity. Education in the sense of the term as used in Acts of Parliament looks solely to the welfare of the rising generation.* (c) But education in the wider sense is synonymous with culture, with the improvement of the adult of the human species. When a student is engaged on the history of education, it is often best to employ the term in the wider sense, as a survey of all the forces that have fostered culture and intellectual progress, but for the purposes of professional practice, it is best to limit the term, and include in the scope of education only those efforts which are directed to care for the immature of the human species. The comparison of human life with various types of animal life exhibits education as a universal process in which mankind are able to make unique progress on principles which are, nevertheless, playing an analogous part in the animal world. (d) This is especially true in the field of parentage and social relationships; hence the connection between biology and sociology.

* Some writers are beginning to recognize that within the term "rising generation" there should be included many classes of unfortunate human beings who will never rank with adult citizens, although they are of adult age, who are as helpless and dependent as children. Their progress—in the interests of society itself, quite apart from our instincts of compassion—demands that they be aided by educative processes analogous to those employed on behalf of scholars. This view comprehends the care of defectives and criminals within the scope of education, teachers being aided here, as indeed in all the work of our profession, by the physician. But it will be a long time before this attitude towards the abnormal classes of society is accepted in any thorough sense by public opinion.

CHAPTER III.—*The Contribution of Physiology.*—Here we confine our conception of life to its physical manifestations. The important phenomena may be classified thus: (a) The special importance of brain structure in all mammalia; and therewith the study of the nervous system. (b) The study of the growing organism from infancy to maturity, and its physiological changes. (c) The congregation of large numbers of scholars in buildings for the purposes of life in school creates the modern science of school hygiene. (d) The intimate relation between body and mind requires conceptions of duty in the care of the body (personal and social) which are beginning to be realised in the present day with new force (the ethical aspects of hygiene).

CHAPTER IV.—*The Contribution of Genetic Psychology.*—(a) A reform in the relation of psychology to education is apparent; the formal psychology of earlier days did more harm than good by its pretentious claim to prescribe both method and ideal to the teacher. Excessive introspection by the adult teacher into his own adult experience helps little to an understanding of the immature mind. (b) Popular errors, however, concerning the nature of mind need to be corrected, and to this end an elementary analysis of mental processes is of assistance. (c) This should be combined with practical observation of mental processes as witnessed in the mental life of the *growing organism*; this special aspect of psychology (called genetic psychology, or child study), when treated practically, is of positive value to the teacher. (d) The scholar is expected while in the teacher's charge to enlarge his experience by gaining definite knowledge in many realms of thought, to develop his tastes, and to acquire many serviceable habits: those portions of psychology, therefore, which profess to throw light upon the processes by which knowledge or appreciation or skill are acquired merit special attention, but they need always to be studied in close relation to experience in actual teaching; logic and æsthetics may also aid the teacher in analysing relations between the scholar and his environment. Few teachers, however, are able to bring these formal studies into close relation to school experience.

CHAPTER V.—*The Contribution of Sociology.*—The law of adaptation and reaction to environment finds its fullest expression in the life of the scholar, as growing into membership with a social organism whose roots are in the past life of mankind, and whose branches reach over every region of the globe. (a) The scholar grows to be a member of the body politic, and not only of the family—hence the school is a civic institution controlled by several "corporations"—and the teacher is their agent. (b) The practical demand made by these corporations is that the scholar shall become gradually adjusted to his place in the community, gradually extending his outlook and his experience over tradition, language, science, conduct, service. This is the aim of education as gathered from observing the social aspect of human life. (c) And this aim is always seeking to be realised (i) in the curriculum of school pursuits, (ii) in an appropriate

organisation of school societies—each of its own type, with its specific corporate life.

CHAPTER VI.—*The Contribution of Ethics.*—The "ends" for the teacher's labour as indicated in biology and sociology do not satisfy. For the phenomenon of unsatisfied ideals is a fact of human experience that cannot be ignored. Man is not content with his environment; he admits the claims of something called "duty," which compels him to resist society and even to force his environment to adapt itself to him! Effort after a "higher life" may, indeed, if preferred, be regarded as a biological and sociological phenomenon necessary to the survival of the type—re-adaptation rather than adaptation. The teacher's task is therefore not fulfilled when he merely adjusts the growing organism to existing conditions.

The moral and religious experiences of the teacher, whether aided or not by formal reflection upon ethics and theology, are his guide in this field of inquiry. While psychology may help him to realize the mental mould of "character," ethical experience alone will help to judge what its "content" should be. And this needs to be re-examined, for professional purposes, from two points of view: (a) the growing scholar is immature in morals and religion as in every other part of his life (chap. iv. c). Hence the ethical life of a school community should differ from that of an adult social organism; the teacher's influence and exposition need to be simple, and (b) the teacher as an agent of the community (chap. v., a, above) has to conform to a professional standard by limiting his own freedom in influence over the scholar. This is especially important, since the young are so susceptible to suggestions from adults.

CHAPTER VII.—*The Contribution of Politics.*—The function of the State as now exercised in modern communities is establishing an intellectual and spiritual control over the rising generation more powerful in its effects than the influence of any religious or political corporation known to human history. Hence a systematic survey of the scope and effect of education is incomplete unless the bearings of political science are taken into account. The methods by which the State (national and local authorities), the Church, and other corporations exercise this control must differ from the methods appropriate to the exercise of their functions in other spheres of their activity. Political science, with its own data and its own ideals (differing for every nationality and, indeed, for every locality), indicate conditions to which the school and the teacher have to conform; but there must be elasticity and freedom in the life of the school if education is to fulfil in any degree its higher aims. This study constitutes a distinct field of scientific enquiry which may be termed the administration and organisation of education.

CHAPTER VIII.—*Summary: the ground covered in a definition of Education.*—(a) Education is a deliberate process, something additional to the inevitable experiences which lead every organism to conform to its type and achieve its destiny. (b) The scope of education as a field for professional practice

is confined to the welfare of the rising generation. (c) Its achievement is undertaken by a variety of corporations (family, Church, State, and so forth), each of whom assert claims upon the scholar. (d) The end of education may, in vague language, be described as seeking the "welfare" of the rising generation: the content of the term *welfare* can only be filled in after inquiries which concern the widest and deepest interests of human life. These, as organised science, are offered in biology, sociology, and ethics. The specific deliberate influences which we call education are such as promote this welfare apart from the satisfaction of merely physical needs, which are still left (?) as a responsibility for the family alone. (e) The machinery for achieving this end is a civic institution called the school, which is organised under many types, consisting always of scholars (a group of the rising generation) and of (professional or lay) teachers.

SECONDARY SCHOOLS AND THE UNIVERSITIES.

IV.—THE UNIVERSITY OF BIRMINGHAM.

THE modern local university possesses, at any rate, one advantage over the ancient Universities of Oxford and Cambridge. Its administrative and legislative bodies are of recent creation, fitted for the work they have to do, and ready to do it in a businesslike and expeditious manner; and new developments of these bodies may be easily brought into existence for any special purposes which may from time to time arise. The working of the legislative machine is therefore not clogged by necessary references to large and amorphous academic bodies whose members are not in touch with the march of educational ideas. Birmingham has no experience of such assemblies of graduates from far and near as has been witnessed lately in fateful emergencies at Oxford and Cambridge.

The University of Birmingham, when its relations to secondary schools came up for consideration, began by appointing a special Advisory Board *ad hoc*. This Board included, in the first place, a number of the professors of the University, especially those whose special subjects stood in more immediate relation to the subjects taught in secondary schools; the Principal himself became the chairman, and by these means was secured, in the first place, a unity of purpose between the Board on the one hand, and the Senate and Council—the actual executives of the University—on the other. Secondly, the Board included representatives of all the larger education committees of the midland district. The University is fortunate in being situated in the centre of a populous, compact district, of which the excellent railway arrangements make Birmingham the natural meeting point. The district is a very extensive one, as will be seen from the fact that Derby, Leicester, Northampton, Banbury,

Gloucester, Hereford, Shrewsbury, Stoke, Leek, have been in the habit of sending representatives to educational meetings in Birmingham. A line drawn on the map through these places will show how wide an area may be considered as within this University's sphere of influence. Within this ring-fence the counties and county boroughs have sent representatives to the Secondary Education Board of the University. Thirdly, the Board contains a considerable number of the headmasters and headmistresses of the secondary schools of the midland district; these members were chosen by the Headmasters' Association and the Headmistresses' Association, so that they may be considered representative, and it is noteworthy that they come from each type of school—both day school and boarding-school, both first-grade and second-grade. This third element has been of the utmost importance in the deliberations of the Board, has been, indeed, the guiding factor; and by its means the University has made sure that its policy is in accord with the predominant policy of the secondary schools.

(a) The first subject to which the Secondary Education Board addressed itself was the question of the training of secondary-school teachers. A large conference early in 1904 revealed the fact that a considerable amount of diversity of opinion still existed among schoolmasters on this subject: the old *non possumus* attitude was not entirely absent, more especially among the younger men, and the preponderance of opinion tended to increasing the importance of the practical side of training as compared with the more theoretical side, which in some places has been unduly accentuated. In accordance with this drift of opinion, the Committee worked out a series of regulations for a new Secondary Teachers' Diploma, which will stand as one of the ordinary avenues towards registration on Column B.

In the first place, the diploma is limited to those candidates who, having graduated, are willing to give a whole year to qualifying themselves practically for their profession. Such candidates will spend, as a rule, the whole of their mornings during term time in making themselves familiar with the ordinary routine of a school; each one is assigned to a particular school, and is under the supervision of the teaching-staff of that school. At the outset the raw hand will not, of course, be intrusted with the responsibility of any class, but by observation, consultation, and other means will make himself familiar with the methods of the best teachers, and help in any obvious way that may turn up. Any candidate who is worth his salt will, however, rapidly become competent to take work "on his own"; often the accidental absence of a member of the staff will give him his first opportunity, and by the commencement of the second term he is probably in a position to repay, at any rate partially, to the school the trouble lavished upon him at the beginning, and by the end of the summer term he will have become a very useful person. Meanwhile he has noticed and realised the various administrative difficulties that are

normal in schools, and how they may be overcome, *e.g.*, the special circumstances of "beginning of term" and "end of term," the discipline necessitated by awkward buildings or class-rooms, and so on; there are a hundred matters of this kind which theoretical lectures leave practically untouched, but which are essential elements in the equipment of the trained teacher. By remaining a whole year in the school, also, one most important thing is secured, *viz.*, the importance of realising the curriculum as a whole. Too often it becomes the hallmark of a trained teacher that he may give a single lesson with great success, but has not mastered the relation of that lesson to the lesson before and the lesson after and its position in the whole-year unit. The scheme, therefore, while providing that the progress of each candidate shall be watched and noted throughout the year, does not make the giving of a "specimen lesson" a part of the examination on which the diploma is awarded or refused at the end of the year. The student's time, over and above the morning hours in school, is given to the theoretical side of the work at the University; this work follows, to some extent, the lines of similar work done elsewhere; but at Birmingham especial stress is laid on the fact that there is no cut-and-dried formula for a teacher; that each individual must work out his own salvation, and choose from others the hints which are suitable to himself.

The success of a scheme like this depended, of course, in the main on the sympathy of the schools; this, however, was made almost a matter of course by the constitution of the Secondary Education Board, and, as a matter of fact, very few heads of schools refused to lend a hand. Before the end of the summer term, 1904, it was possible to make out a list of thirty-five schools, twenty-six for boys and nine for girls, which were willing to take candidates for the diploma on the conditions specified; this list included not only the day-schools, of which King Edward's school at Birmingham may be taken as the leading representative, but those of the public boarding-schools—Bromsgrove, Cheltenham, Malvern, Repton, Shrewsbury—which fall within our district.

It was not possible to make the scheme widely known before the commencement of the session 1904-5; nevertheless, five students are now going through the course with every sign of success. It may be confidently predicted that in the near future this Birmingham University scheme will be able to train the twenty-five or thirty secondary teachers which represent the annual "leakage" among the schools of the midland district.

(b) In its reference to the Secondary Education Board, the Council to the University especially commended to their consideration the regulations of the Matriculation examination. This examination constitutes in reality the entrance-test for the University, and may, therefore, be considered the connecting link between the secondary schools and the University; it was, therefore, only reasonable that in the arrangement of it the headmasters and headmistresses should have a voice,

as well as the professors. The result was a series of most interesting discussions; and, although it is not necessary here to go into matters of detail, it will be seen that matters of general principle have been very largely dealt with.

In the first place, a long discussion took place as to the syllabus of the subject called English. Up to the present secondary schools have, as a rule, not given the proper attention and importance to the study of the mother tongue, and the lead given by the universities by their matriculation syllabuses has been, as a rule, in the strictly philological direction. But both sides are now agreed that the one thing desired is that our students shall have read and, to some extent appreciated, some of the great classics of our literature. Too often the attention of teachers has run off to minute points of scholarship and criticism of a kind unsuitable to schoolboys and schoolgirls, and the subject-matter of the books themselves has been left as a matter of secondary interest. In future in Birmingham this mistake is to be avoided; every candidate for matriculation will have read his definite quantum of approved classics; but he will have read it as an intelligent student, not as a critic.

Of the other changes made in the Matriculation regulations, it is only necessary to mention one other, for it may directly affect the relations of the University to the schools. Hitherto every candidate for a degree at the University must first pass Matriculation and then go through his three years' course (four years in the case of engineering) of approved classes before graduating. But there are several schools in the midland district—King Edward's School, Birmingham, is again the most obvious example—who keep their scholars considerably past the age of seventeen, and are therefore often able to carry them to a standard of attainment more nearly corresponding to that of the Intermediate examination of the University than to that of Matriculation. If such a scholar desires to proceed to the University, he has had nevertheless to revert to Matriculation and then, in his first year, retrace the steps of his last year's progress at school. It is now proposed that such scholars may pass their Intermediate on entrance, and thus be able to begin their degree course at a higher point, and not waste time in repeating work which is familiar. In this way they will be able, in their three years, to do much better work and take a higher academical place; by the same means the four years' engineering course may be reduced to three years, and the five years' medical course to four years. The essential fact here is that the University is glad to recognise the highest and best work done by the first-grade schools, and give their scholars the fullest credit for it.

(c) But the rectification of Matriculation regulations only goes half-way towards appreciating the best work of the schools; and the University of Birmingham has not been slow, with other academic bodies, to see that it is more blessed to fit examinations to teaching than teaching to examinations. It has, therefore, set up its own scheme

of Leaving Certificates (though it has dropped the word "leaving," as it is neither necessary nor desirable that a boy should leave school on obtaining such a certificate), which will exempt their holders from the *onus* of passing either Matriculation or any of the numberless professional entrance examinations for which Matriculation stands as one of the alternatives. The whole idea at the bottom of the scheme consists in giving the fullest liberty to the teacher. Schools which come under the scheme must, as in other cases, submit to the inspection of the University; but it is hardly necessary to say that the inspection contemplated is the "sympathetic" inspection of modern ideas, and not (as of old days) that of the policeman or spy. Throughout the academic year the representatives of the University will be in the closest touch with the headmaster and his staff, or the headmistress and her staff, and curricula, methods, &c., will be under constant consideration between them. The standard of the Certificate examination itself, however, will be fixed by the University; any slackening of this standard would not only be fatal to the standard of its own degree work, but would be a breach of faith towards the professional bodies who accept it in lieu of their own examinations. It is not necessary to labour details further, but it is easy to see how effective such a body as the Secondary Education Board has been in handling the principles involved in these schemes.

The scheme has been generally accepted by the professional bodies: in particular it now constitutes one of the "Leaving Certificates" accepted by the War Office under its new regulations.

CAMBRIDGE LOCAL EXAMINATIONS, 1904.

HINTS FOR TEACHERS FROM THE EXAMINERS' REPORTS.

THE annual report of the Local Examinations and Lectures Syndicate of the University of Cambridge has now been published. It contains the most important of the remarks in the reports of the Examiners, and the following article may be regarded as a summary of those general weaknesses, in the more important school subjects, exhibited by candidates in last year's examination, which teachers would do well to guard against in preparing candidates for the examinations of December next. The order of treatment is that followed in the report of the Syndicate:—

COMPULSORY SECTION.—Preliminary candidates, the report states, have shown during the last few years steady improvement in *arithmetic* in the working of questions on decimals and the decimal system of weights and measures, the absurd practice of reducing such questions to questions on vulgar fractions growing less common every year. At certain centres, however, the practice still exists, the natural conclusion being that the teaching is

at fault. Inaccuracies were in many cases due to cramped methods of working.

So far as junior candidates were concerned, the examiners say that a question involving French money and measures was badly answered by the majority, very many failing to see that it should be treated by decimals, and using complicated vulgar fractions, and sometimes "reduction" or even "practice." It is strange, they continue, that the metric system should still be so greatly neglected by many teachers. In the harder part of the paper the question on contracted methods of multiplication and division was the one most unsatisfactorily answered, necessary figures being omitted and unnecessary ones retained, sometimes by the same candidate; some apparently used long methods in their rough working and then copied out their work with the redundant figures omitted. Many failed to give the answer to a question on time and distance, as required, "to the nearest tenth of a second."

ENGLISH SECTIONS.—In *English grammar* comparatively few preliminary candidates gave a satisfactory definition of a participle, and there was an almost universal failure to parse a gerund properly. Many of the candidates failed to convert a sentence from the active to the passive form. Analysis on the whole was weak, an interrogative sentence proving a stumbling-block to many.

The great majority of the junior candidates showed a very imperfect acquaintance with the correct usage of the relative pronouns, and their composition was not satisfactory.

In the passage set for analysis by senior candidates the vocatives and the clauses introduced by them created much embarrassment, and one of the clauses was usually omitted. The identification of the faults of grammar and style in given sentences was often too elaborate, and the main point was lost sight of in a crowd of trifling and unnecessary emendations.

The paraphrasing of *Scott's "Marmion"* by preliminary candidates was often a weak point in the papers, and it was clear that in very many instances too much had been taken for granted by the teachers as to the knowledge of their pupils.

There was a common tendency among junior candidates, answering questions on *Shakespeare's "Richard II."*, to reproduce in ill-digested form the dissertations of text-books. In the answers of the same class of candidates to questions on *Scott's "Marmion,"* comparatively few of the paraphrases were clear and correct, and two out of the four allusions that needed explanation were missed by many of the candidates.

In the paper for senior candidates on *Spenser's "Faerie Queene"* the question which was worst done was that on paraphrasing. Many students threw the passages set for paraphrasing into the indirect form of speech, others introduced explanatory matter not in the original, and many produced versions either quite ungrammatical or at least in themselves unintelligible. An excessive number of the senior candidates failed entirely, in their answer on "*Shakespeare's Richard II.*," to understand

the construction of Shakespearian sentences, and applied grammatical terms such as "reflexive," "ethic dative," &c., without any comprehension of their significance. From the general inability of candidates to see the drift of the two passages which they were asked to turn into simple prose it was evident that in many cases adequate study of the text had not been insisted on.

The chief defects of the stronger senior candidates in *English history* were the mechanical character of much of their work, and a marked tendency to substitute simple narrative for discussion where discussion was required: for this reason the answers dealing with the execution of Mary Queen of Scots and the change in Elizabeth's position between 1558 and 1603 were the least satisfactory. The accounts of Cranmer were often very poor, and in the answers to the question on Scotland the chronological limitation was often disregarded. The verbal quotation of text-books was still noticeable.

In their *geography* papers more than half of the preliminary candidates confused or identified the terms *country* and *continent*, both in fixing the positions of places and in giving the origin of products: many errors were also made, even by the better candidates, concerning the positions of seas and oceans.

So far as the work of junior candidates in *geography* was concerned, the examiners say that attention should be called to the necessity for clearly marking the places in the maps to which the names of capes and islands are intended to apply. Many appeared not to understand what is meant by a description of the physical features of a country. The answers to a question bearing on internal communication showed great lack of precision, and there was evidence that but little attention had been given to drawing maps from memory, the chief fault being want of proportion. A question dealing with the coal-fields of the United Kingdom was very well answered, but there was a confused knowledge of the industries connected with them.

CLASSICAL SECTION.—A great many of the preliminary candidates in *Latin* had failed to get up the book set for translation in an adequate or satisfactory manner. The unprepared translation was seldom good, and still more rarely the Latin composition. The difficulty in the latter seemed not so much the want of words as the inability to construct the shortest sentence with subject and object in the right cases.

There was not sufficient accuracy shown in the translation of the Latin tenses by junior candidates, and often when the Latin sentence was at all long the rendering was in very bad English. Sometimes, too; words were parsed without any reference to the passage in which they occurred, and the omission of important points made the answer worthless. The syntax question was not well answered; it would seem that the set books had not been used as they should have been as a means of instruction in the language. The question on scansion was very badly answered, and in

several cases ignorance of the metre led naturally to mistakes in translation.

In the *Latin grammar* of junior candidates irregular verbs were not conjugated well by any except the best candidates, and the question on the comparison of adjectives and adverbs too often received poor answers. Few of the candidates, too, could give the direct statement corresponding to a passage in *oratio obliqua*. In *unprepared translation* great weakness in vocabulary was shown by a large percentage of junior candidates.

The questions on the subject-matter of the set books in *Latin* were badly answered by most senior candidates. In the answers on syntax there was widespread ignorance as to the meaning of the phrase "explain the construction," many confusing it with parsing. A very large number of these candidates, too, were unable to give the forms of the five common verbs set when compounded with *ex*.

MODERN LANGUAGES SECTION.—In the *French* papers of preliminary candidates, the questions on adjectives and verbs were usually well answered, but those on pronouns and adverbs not so well.

The easy unprepared translation of junior candidates was on the whole creditably done, though weakened by a failure to render correctly *quoique* and *à travers*, and a tendency to translate French words by the English words most nearly resembling them in appearance. In the grammar answers of junior and senior candidates the question on the numerals was for the most part badly answered.

Of the *French compositions* of senior candidates three-fourths were almost worthless, containing hardly a single sentence without some gross blunder. About fifty per cent. of these candidates offered unprepared translation in lieu of set books. This increase in number was accompanied by some falling off in the quality of the work, but, on the whole, these candidates did better than those who took set books.

MATHEMATICAL SECTION.—In the *theoretical geometry* papers of preliminary candidates, the propositions were done satisfactorily by a fair number, but in many cases the reasoning was very loose and faulty. The proposition that the angles of a triangle are together equal to two right angles was done very well indeed by the majority of those who used Euclid's proof, or a similar one; and, as a rule, very badly by those who attempted the rotational proof. The practice of numbering, instead of lettering, the angular points of a triangle led to some slovenly work. The attempts at the riders showed once more the importance of impressing upon students that two triangles are *not* necessarily equal in all respects when two sides and an adjacent angle in each are equal.

The proofs of the book-work propositions given by junior candidates were fairly satisfactory, except that the proof given of the congruence of two triangles having two sides equal as well as two pairs of corresponding angles was in many instances worthless. In the more advanced part of the junior paper the work was very unsatis-

factory, although at a few centres there was evidence of careful teaching. In attempts to construct a circle to pass through two given points and touch a given line, the centre was except in rare instances found by trial. Few of the candidates were able to construct a rectangle of given area having its sides in a given ratio. The book-work propositions (Euclid VI. 3 and 4) were proved by about twenty per cent. of the candidates, of whom more than half substituted for the Euclidian a modern proof of VI. 4.

Many of the senior candidates were still unable to distinguish between correct and incorrect reasoning, more especially in the exercises; while even in the case of propositions irrelevant remarks were inserted in otherwise correct proofs. The earlier work at many centres needed revision. The treatment of the tangent to a circle as the limiting case of a secant was often defective, especially in those proofs which depended on the bisection of the chord. The treatment of proportion was on the whole satisfactory; but in a great number of centres little progress had been made in solid geometry.

In the preliminary *algebra* papers, a question on the substitution of given numerical values for algebraical symbols revealed a very widespread impression that the product of 1 and 0 was 1. It was also very commonly assumed that the sign of an expression might at any time be changed at will; while the old mistake of omitting altogether the common denominator in the sum of several fractions was very frequent.

The most prominent error among the juniors was in the simplification of fractions, and consisted in performing the process of addition before that of multiplication. The question on square root was usually well answered; but those who reduced the expression to a common denominator, while they extracted the root of the numerator correctly, often either neglected to extract that of the denominator or ignored the denominator altogether. When a root was found not to satisfy an equation, it seldom occurred to these candidates to try to discover the source of the error. In the simultaneous equations errors in the roots were frequently not discovered, owing to the use of one equation only in the verification. Many candidates, too, finding that one root of the quadratic, owing to some error, did not satisfy the equation, were led to the conclusion that the quadratic had only one root.

A mistake referred to in the last report and also in the report for 1902 was still very common among senior candidates, namely, the use of the wrong sign with the difference of a decreasing arithmetical progression.

NATURAL SCIENCES SECTION.—A lack of simple experimental knowledge accounted for most of the failures among preliminary candidates in *experimental science*. The method of substitution, as a way of obtaining a true weight with a false balance, was not given as generally as might have been expected.

A question on the burning of a candle was not

well done by junior candidates. A considerable proportion described an experiment in which a candle was lighted and allowed to burn in a closed vessel, and asserted that a consequent increase in weight is observed. In a question on chalk, reference to the chemical formula as a proof, rather than a record, of its composition, was common. In the practical examination, the results of an experiment on the solubility of common salt were not so good, and wrong methods were adopted in many cases. Few good determinations of the specific heat of tin were made; this was generally due to the fact that the candidates used too small a quantity of the metal, the rise of temperature obtained being consequently insufficient for satisfactory measurement.

It was noticed in the *chemistry* papers of junior candidates that, in the answers to a question involving a calculation, the corrections for temperature and pressure, which ought to have been made on the volume of a gas, were often misapplied to the weight of a solid.

The work of senior candidates in *practical chemistry* was unsatisfactory. Few of the candidates realised what was meant by the solubility of a salt. In the qualitative analysis the majority of the candidates hastily concluded from the appearance of the substance that it was copper sulphate without applying sufficient analytical tests. Attention must again be called to a mistake which occurred over and over again, namely, the use of barium chloride alone as a test for sulphuric acid or a sulphate.

The treatment by junior candidates of the questions in the *botany* paper dealing with the simple principles of plant physiology was, with the exception of a few centres, far from satisfactory. Many of the candidates were hopelessly confused as to whether the experiments they attempted to describe were intended to illustrate transpiration or carbon-assimilation. Hardly any had even rudimentary ideas as to the use of a potometer. These results were almost certainly due to insufficient attention having been paid to the practical study of the subject. The candidates had seen a few simple experiments performed, but seldom had carried them out for themselves. This same lack of practical knowledge was further illustrated in a question dealing with the various types of pollination. The majority of the candidates quoted the sweet pea as an example of a flower pollinated by bees.

The general absence of explanatory diagrams in the *physical geography* papers of junior candidates was regrettable; many candidates wrote at great length on some subjects which could have been, with the aid of diagrams, explained more clearly and much more briefly. It was surprising that many could not explain satisfactorily the origin of a simple spring. A large number of candidates were evidently unfamiliar with contoured maps. In fact, the treatment of the map and the answers to some of the other questions suggested that the schedule for the examination in physical geography had not received sufficient attention.

SOME RECENT WALL MAPS.

THE revised editions of Stanford's "Large Series of School Wall Maps"¹ are excellent specimens of the cartographer's art. We have under review the "Political Map of England and Wales." It may be described as a reduction of the Ordnance Survey strengthened boldly for the use of schools. Drawn on a scale of about seven miles to the inch, and measuring fifty-eight by fifty inches, there is plenty of room for the "boldness" which is always a desideratum in school wall-maps. One excellent point is well brought out, viz., the estuary shallows round the coast. For the rest, the southern part of Scotland and the eastern shore of Ireland are shown, and cable communications are indicated. The price is thirteen shillings, at which surely none can cavil. We think, however, that the publishers have attempted to show too much for teaching purposes. Seven types of print have been used for assigning character to towns, from the city of over 200,000 inhabitants to the village of under 2,000. Additional letters or signs are added to distinguish county and assize towns, municipal and county boroughs, episcopal sees, and even the number of parliamentary representatives. All this has meant slightly overloading the map with names—again we speak entirely from the point of view of the practical teacher. Wiltshire, for instance, naturally one of the "less crowded" counties, has no less than twenty-five names of towns and villages, and this, of course, is exclusive of rivers, other natural features, and railway lines.

Stanford's "New Orographical Map of Lancashire and Cheshire"² is a most effective school map reduced from the Ordnance Survey by Messrs. Hewlett and Kelsey. It is evolved on quite the right principle, the prominence of physical features. The orographical colouring is distinct; contours are laid down at 300, 600, 1,000, 1,500, 2,000 and 2,500 feet, and are graphically shown by deepening shades of brown (no green). *There is no overcrowding of names.* County boundaries are plain; so are railways and canals. Tidal limits are indicated. The only point we do not like is the employment of hollow circles for towns; they seem to lack distinctiveness. Still we recommend the map unreservedly to teachers, above all to teachers who make physical geography the basis of their geographical teaching. Certainly every school in Lancashire and Cheshire ought to procure this map, and as there are also included in its confines the West Riding of Yorkshire (so far as Bradford), together with the southern portions of Westmoreland and Cumberland, parts of Staffordshire and Derby and all Flint, many other localities should be interested. The scale is two miles to the inch, the size 42 by 60 inches, and the price fifteen shillings; altogether a capital map.

We are afraid outline maps, or any other maps on the equal area projection,¹ are still but little used by schoolmasters. This famous idea of Mollweide's represents the earth as an ellipse, having the Equator as its major and the central meridian as its minor axis. Briefly its objective is the representation of the same number of square miles by a square inch on any part of the map. The teacher who has to meet youthful enquiries on the enormous size of Greenland, or the north coast of Asia, as presented by the ordinary Mercator, should appreciate this, even though the elliptical form of Mollweide's famous World Map twists Australia and the west of North America into shapes far removed from his notions of orthodoxy! He might, at any rate, do worse than invest in a few of the new outline maps on this projection. They are published by Messrs. W. Stanford and Co., of the Oxford Geographical Institute, who are prepared to supply maps of the world, or any part of it, on almost any scale, at prices varying from sixpence each to less than a penny—proof positive of the comparatively true relation the various parts of this projection hold to each other. The sheets are of all sizes, from 20 by 30 down to 2 by 3 inches, and should be particularly useful for plotting all sorts of distributions.

Philips' "Map of the World on Mollweide's Equivalent or Homalographic Projection"² is the first large wall-map that we have seen published for schools on this most useful projection. As the huge sheet (80 by 60 inches) also contains maps on Mercator's as well as Lambert's Azimuthal Equivalent projection, this somewhat abstruse branch of geographical education may be said to be well catered for. The juxtaposition of the old-fashioned Mercator and the "Equivalent" is most interesting; each acts as a welcome corrective to the other on prevalent notions of the size and shape of various portions of the earth's surface.

The sheet contains six maps in all—a large one of the world coloured to show the physical features, another (the Mercator) to show the political divisions and especially the British Empire, and four smaller insets, two of the ocean currents in both hemispheres, and two of the Arctic and Antarctic regions. It is, therefore, a species of "encyclopædia" amongst wall maps; indeed, one is tempted to say that the expert teacher armed with Philip's "World" only requires his pupils to possess good school atlases and he is ready to tackle almost any country, certainly any large region, on the planet.

The main criticism we have to make—from the teacher's point of view—is that the publishers have attempted to show too much on the large map. The physical features of a small continent like Europe are almost obliterated, not so much by the number as the size of the names. This defect, however, is naturally not so striking for the rest of the world, though even here we think the teacher

¹ Stanford's Large Series of School Wall Maps. "Political Map of England and Wales," 58 in. by 50 in. 13s.

² Stanford's "New Orographical Map of Lancashire and Cheshire." 42 in. by 60 in. 15s.

¹ Outline Maps on the Equal Area Projection. All sizes. Messrs. William Stanford and Co. (Oxford Geographical Institute).

² Philips' "Map of the World on Mollweide's Equivalent or Homalographic Projection." 80 in. by 60 in.

would be better served with half the superincumbent matter. Having said so much, we have nothing but praise for the general plan of the map. It forms one of the well-known "Comparative Series" of large school maps; its colour scheme is of the orthodox international type: blues for ocean depths, greens for low-lying lands, and browns for uplands. Specially prominent in consequence are the great "deeps" of the oceans and the shallow "shelves" of the continents, the large northern plains of Eurasia, the wide area of lowlands in South America, and the large plateaux of Eastern Africa, Central Asia and Western America. Four different signs, coloured red, are used to indicate important towns; the boundaries of countries are shown in thick red lines; railways and ocean routes, the latter with figures of mileage attached, appear in black. It is, as a map of this ambitious type should be, quite up to date; it shows the British South African railway system right up to Victoria Falls, and the latest Russian addition to great trade routes, the Orenburg-Tashkent line. In the Antarctic inset Scott's experiences have been utilised, and "King Edward VII. Land" incorporated; in the map of Arctica the latest observations have been drawn upon to show the southern limits of drift ice between the British Isles and North America.

The scale of the Mollweide is 1 : 21,000,000, or 331½ miles to the inch on the Equator. As the teacher would buy the map for this and the Mercator, it is perhaps hypercritical to remark that the four insets are too small to be of much use in class teaching.

Messrs. Philip and Son issue a cheap series of ten maps covering the countries of Europe, drawn and coloured to imitate actual relief models.¹ Nor are they bad imitations. The prevailing tint is brown, graded, of course, according to altitude above sea level, and upon this background the white ribbons of river-systems appear delightfully distinctive. One or two features there are which we do not care for: the red railway lines appear—at all events on the map of Norway before us—somewhat arbitrarily selected, and, moreover, interfere with the red political boundaries; the absence of parallels and meridians makes itself felt; lines merely drawn from port to port are not of much value, and contrast badly with the more instructive routes giving mileages, in figures, to London, St. Petersburg, &c.; on the other hand, we commend the omission of all names. The maps are, in consequence, useful either for teaching or test purposes, and are well worth a trial by the teacher who can stand before his form without a textbook in his hand.

By synthesis, in the study of geography, Rousseau seems to mean the process which begins with the immediate surroundings of the child, and, by successive additions of territory, finally rises to the conception of the globe as a whole; and by analysis, the counter-process, which, starting with a conception of the globe as a whole, or, it may be, with the solar system, descends by successive division to the child's immediate neighbourhood.

WILLIAM H. PAYNE.

¹ Philips' Relievo Test Maps of the Countries of Europe, 36 in. by 28 in., 3s. to 5s. (according to mounting), the whole set, 25s.

ROME UNDER NERO.¹

MR. DILL made his reputation with the brilliant sketch of Roman society in the fourth century; the present work well maintains it. His subject now, it is true, lacks the novelty of the first book; but, on the other hand, people think they know more than they do about Rome under Nero. Who could get a fair notion of England in the seventeenth century by reading "Gulliver's Travels?" Yet people fancy they know Rome when they have read Juvenal and Tacitus. Even if they did know Rome, they would not necessarily know the Roman Empire. Mr. Dill sets off against Juvenal and Tacitus the younger Pliny and his friends, and in particular instances his public spirit and charity, which was by no means uncommon under the early Empire. He sketches the life in a quiet country town, which is amply illustrated in thousands of inscriptions. We should have expected to find a chapter on provincial life also; the lack of one such is a serious fault in the book. The Society of the Freedmen, and the Colleges and Plebeian Life, are the titles of two other chapters, which contain matter which will be new to most readers. The third book is devoted to a consideration of the philosopher in three aspects: the Philosophic Director, the Philosophic Missionary, and the Philosophic Theologian. The first chapter is an analysis of the teaching of Seneca; the second deals with the cynics, Peregrinus, and Dion Chrysostom; the third, with the theological ideas of Epictetus, Marcus Aurelius, Apollonius of Tyana, Plutarch, Maximus of Tyre. Superstition and various sides of the regular religion take up the fourth and last books. Amongst other topics dealt with are the belief in immortality, the modifications of the old Roman religion, and particularly the cults of Isis, Serapis, and Mithras. These are brilliant sketches, yet they show none of that lack of scholarship which sometimes goes with brilliancy. Mr. Dill is scrupulously careful to cite his authorities; and only those who have tried to compose a similar essay can know how much labour it costs to condense a host of scattered statements and references into a coherent and lucid whole.

This book is so admirable in most respects that we are not ready to find fault; yet there are some faults. Since the system of classification differs in the different books, some of the chapters overlap; and where this is the case, Mr. Dill has not been careful enough to avoid repetition. He repeats phrases or even sentences with little change. His use of the inscriptions, again, seems not to be exhaustive: he quotes Orelli-Henzen rather than the *Corpus* or even Willmanns. Nor is it clear that he has fully appreciated the influence of Christianity in the early centuries. In parts the

¹ "Roman Society, from Nero to Marcus Aurelius." By Samuel Dill. xxii. + 639 pp. (Macmillan.) 15s. net.

style is a little stiff; but it is clear and dignified, and maintains a very high level of excellence.

Mr. Dill is to be congratulated on his work, so able, lucid, judicious, and withal interesting; it will be indispensable to the serious student of Roman life and manners.

SPELLING REFORM IN FRANCE.

In a "Rapport sur les projets de la Commission chargée de préparer la simplification de l'orthographe," the French Academy has issued its criticism on the spelling reforms submitted to it. The report consists of twenty-one pages, of which the first nineteen are filled with rejected reforms and the last two with alterations accepted by the Academy. The accepted reforms are given below.

Amongst the reasons for rejecting most of the proposed reforms the Academy states: "Nothing is more arbitrary than 'une orthographe phonétique' based on pronunciation which will vary from generation to generation and from province to province, while no one will be able to say which generation or which province possesses the true pronunciation. It recalls the fact that ambassadors and *chargés d'affaires* have protested against the projects of the reformers of French spelling; declares that to accept the proposed changes would be to upset the very foundations of literature and render useless entire libraries; and, lastly, shows how illogical the reformers are who uphold such spellings as: mission, passion; chez, assez, nez; as well as: home faccieux, bèle fame, vile tranquile, manjer son arjent, vint rozes; anée, traïson, j'ai u.

L'Académie accepte, sans donner toujours ses raisons, puisqu'elle adopte celles qu'en donne la Commission chargée de préparer la simplification de l'orthographe et y renvoie, les réformes suivantes:—

- (1) Déja (pour déjà).
- (2) Chute (pour chute), joute (pour jouïte), otage (pour ôtage), modifications que l'Académie a déjà fait entrer dans son dictionnaire; et, de plus, assidument (pour assidûment), dévouement (pour dévouèment ou dévouement), crucifiment (pour crucifèment ou crucifiment).
- (3) Ile (pour île), flute (pour flûte), maitre (pour maître), naitre (pour naître), traître (pour traître), croute (pour croûte), voute (pour vouîte), et autres mots où l'accent circonflexe ne sert qu'à appeler l's étymologique.
- (4) Elle admet qu'on écrive, *ad libitum*, *confidentiel* ou *confidenciel* et les adjectives analogues, c'est-à-dire ceux dont le substantif est en *ence* ou *ance*.
- (5) Elle accepte l'identification orthographique de *différent* et *différend*, de *fond* et *fonds*, de *appats* et *appas*, en ce sens que l'on écrirait, "un différent s'est élevé, un fond de terre, la retraite pour vous des appats."
- (6) Elle accepte qu'on écrive, *ad libitum*, *enmitouster* et *emmitouster*, *ennemner* et *emmenner*, *enmailloter* et *emmailloter*, et autres mots analogues où l'n rencontrant *m*, est devenue *m*.
- (7) Elle accepte *ognon* pour *oignon*.
- (8) Elle ne voit aucun inconvénient à ce qu'on écrive, *ad libitum*, *piéd* ou *pié*.
- (9) Elle accepte que les sept substantifs en *ou* qui prennent un *x* au pluriel—bijou, caillou, chou, genou, hibou, joujou, pou—rentrent dans la règle générale et prennent un *s* au pluriel.
- (10) Elle accepte *échèle* au lieu de *échelle*, conformément et à la prononciation et à l'étymologie.

(11) Elle a décidé de régulariser l'orthographe des mots venant de *carrus* en écrivant *charriot* par deux *r*, comme s'écrivent tous les autres mots dérivés de *carrus*.

(12) Elle est disposée, en examinant chaque cas, à ne pas s'opposer à la suppression de l'h dans les mots dérivés du grec où se rencontre la combinaison *rh*.

(13) De même, notamment pour les mots de création scientifique, elle aura pour tendance de favoriser l'i plutôt que l'y grec.

(14) Elle est favorable à la proposition d'écrire *sizain* comme on écrit *disain* et *dizaine*, et elle estime que l'on pourrait étendre cette réforme à *dizième* et *sizième* (au lieu de *dixième* et *sixième*) par conformité avec et *onzième*.

Telles sont les résolutions que, pleine d'estime pour les excellentes intentions de la Commission chargée de préparer la simplification de l'orthographe française, comme pleine de respect pour la compétence et le savoir de cette Commission, mais voyant quelquefois d'une façon différente les intérêts de la beauté et aussi de la facile propagation de la langue française, l'Académie française a cru devoir prendre.

THE TEACHER'S PART IN THE NEW EDUCATION.¹

By J. H. BADLEY, M.A.

Headmaster of Bedales School, Petersfield.

If Froebel's ideal, namely, the establishment of the best conditions for continuous and connected growth from before the kindergarten to beyond the university, is ever to become reality, it must be by each of us, in whatever stage of education he is engaged, working out the problems of that stage in the light of the larger ideal, and so contributing to its realisation.

In the old education the amount of knowledge to be acquired was the all-important thing, the means of acquiring it entirely secondary. In the new it is quality rather than quantity that we value: the actual amount of knowledge gained is the secondary thing, and the reality of the knowledge, and still more the power of getting it, has become the thing of most moment, so that the means by which it is to be acquired becomes the matter of the first importance. And in consequence, whereas the old aimed at giving the child, as the result of practice, the power of carrying out tasks set by external authority, the new aims rather at awaking the power of setting and following up tasks for himself. In a word, whereas *receptivity* was the be-all and the end-all of the old, *initiative* is at once the starting-point and the goal of the new. We want to produce not copyists, however admirable, but original workers in every sphere, those who will come to their work, whatever it may be, not as a matter of routine to be done in the spirit of duty merely, but as to a new field of effort, full of interest and capable of continually advancing mastery and improvement. To-day it begins to be recognised that this is true of all kinds of scientific work, of manufacture and of business, and it is this recognition which is opening the door so wide to Froebelian methods of education.

Let us be sure that we know what sort of initiative we are to further, for a mistake here may lead us into serious difficulties. If we try to discourage and utilise a boy's love of discovery by turning him loose, for instance, in a science laboratory, it is probable that the results, however surprising, will be more

¹ Abridged from the Presidential Address delivered to the Froebel Society March 24th, 1905.

costly than valuable. Or again, I have known children allowed to do what they liked, and take the command of the household to such an extent that the peace and comfort of all other members was sacrificed. The initiative that we are to encourage must not be confused with mere aimless curiosity on the one hand, nor on the other must it be made a reason for teaching lessons of selfishness.

There is a very real danger that initiative may be treated as comprising nothing more than the name implies—the power of making beginnings. Is it not a special danger of to-day, when we vie with one another in trying to satisfy a child's every want, that the very multiplicity of toys and interests and subjects to learn may result in a series of endless beginnings, taken up according to the caprice of the moment, and the child's course through life may come to resemble a caravan route through the desert, marked by the wreckage of abandoned interests? This in a sense all life must be, for interests change with growth, and not only the man, but the boy before him, puts away childish things. But it makes all the difference whether an interest is abandoned because it has played its part and is outgrown, or because it ceases to interest the moment it is no longer new.

Growth is indeed a series of beginnings, but not of beginnings only, but beginnings carried through to completion; and the true initiative that we want to foster is not a butterfly-flitting from whim to whim, but the pursuit, to its accomplishment, of a clearly discerned purpose. Here, then, is the first thing that we teachers have to do. Our part is not to be mere benevolent spectators while the child works out his own salvation, as would seem at first the logical inference from the new demand for initiative on his part. We are no longer to disregard his impulses, his interests, his manner of expression, and to insist instead only on the pursuit of *our* purpose in *our* way, but we are first to help him to single out a purpose that is in some degree possible of attainment, then to help him clearly to realise the means of attaining it, and lastly, to see that the pursuit is not abandoned before some sort of attainment is reached.

There is plenty of work for us here, and work much harder than setting a task and dragging or driving the beast of burden until the journey's end is reached. It is harder, not because we have to do so much more for the child. This is the mistake into which we are apt to fall at first; and much in the new methods of teaching has failed, and tends to bring all alike into contempt, because it would seem as though, whereas the old left the child unaided to cope with tasks beyond his comprehension, the new would leave him nothing to cope with at all, while the teacher does all the work. We have all, I expect, heard lessons—we have probably most of us given them—in which everything was made so beautifully clear, so admirably led up to, so fully explained, so neatly tabulated, that there was nothing left for the children to do except to swallow our sugar-pill every bit as unintelligently as once they would have learnt their Latin grammar. We are apt, in fact, in our attention to the machinery of presentation to lose sight of its purpose. The art of teaching lies not in doing things, but in getting them done, which is a very different matter. The old education, with all its faults, recognised this elementary truth, and got them done, chiefly by appeal in some form to the stick. The new begins to recognise that to get things done it must appeal to the child's love of doing, to his own motive power. In fact, the motive becomes the main thing. To arouse and strengthen motive, to establish and maintain the right conditions for its realisation—there is our work.

There are, as it seems to me, three main objects to set before ourselves. They correspond to the three main stages of education; but this does not mean that all are not applicable at every stage, and as such let us first consider them. Put shortly they are these: (1) to see that the child has a purpose in all he

does, a motive for putting out his powers, an interest in what he is doing for its own sake. (You will see that I am using the words "purpose," "motive," "interest," unscientifically, without making any exact distinction between them.) (2) To see that he is able, to an extent appreciable to himself as well as to us, to realise his purpose, to carry what he does to some satisfactory conclusion. I need hardly say, the meaning of the terms "satisfactory" and "conclusion" will change with the child's growth. And (3) to see that he feels himself responsible for what he does, that his work is felt to be real, to have a value of its own, that is, and a real use, dependent on his efforts. If we are true teachers, we shall realise that our work is first of all to call out the child's own motive power, to allow his natural interests and love of activity full play, to encourage those that are beginning to show themselves, to awake others that are yet dormant. In a word, the first test of a teacher's power is the power of inspiration. And, secondly, we shall feel that we have to guide the child's energies towards a definite goal, nearer or further off, and at times to insist on his going towards it; that we have to help him to overcome the obstacles that he meets, but not to remove them all or lift him over them without effort on his part. And lastly, we have so to arrange that in all this we do not take all the responsibility off the child upon ourselves; we must see both that he can realise that it is his work, and not merely ours, that he is doing, and that the conditions of the work are such as to make it real work to him, something that he wants to do and undertakes to do because it is worth doing, something needed, something that some one, himself, or others would like to have done. This last is perhaps the most difficult part of our task, to give sufficient motive and reality to much of the work that a child must do.

It is the absence of reality, and the need to supply a secondary motive, that has led to the use of rewards and punishments, to reliance on marks, prizes, impositions, and so forth as incentives, and the place that examinations hold in most people's idea of education. And it is because it supplies this missing element of reality, with its appeal to primary motives, that Froebel turned to children's play—play being the most real thing to the little child—and that his followers claim so large a place for artistic and manual work in education, not only for their own sake, but as giving a greater reality to much else that we do. And this, again, should make us careful to see that such manual work is really constructive and obviously useful. Much hand-work is just as unreal and unremunerative as any book-work it replaces. And we have to remember, too, that this side of education is now laid almost entirely upon the school—at least, to a much greater extent than was once the case. It is part of the price that we have paid for greater ease and wealth and leisure, that there is now much less home education than there used to be. There was a time when children of all classes took their part as a matter of course in the work of the household, in garden and farm, in kitchen, and the general service of the home, and it was as valuable a training as any "schooling" that they got. To-day amongst the well-to-do this training has practically disappeared; there is no opportunity, or at least no realisation of its value. Like so much else for which parents were once responsible, it is thrown upon the school as part of its task of doing by artificial means for the individual what was done naturally for the race. And the school should welcome it as a great opportunity. Work in the house, the garden, the workshop, here is the chance that we want, if we will only use it to the full, not only, as I said, for its own sake, but as the basis for work in science and mathematics. Yes, and in geography and history too. Such work, if it is to be truly educational, must be connected, progressive, scientific; but do not let us forget that we are losing the best part of it if it is not useful too. Let the sewing and cooking,

the garden-work and woodwork, aim at producing real things of actual use. If this is the motive, there will be more desire to master the obstacles and more patience to go through the drudgery without which no real work can be done.

In adopting manual training in the school it is too readily assumed that any kind of manual occupation is in itself educational. No training is truly and fully educational that does not take in the mind as well as the muscles. But the first demand of the mind is *motive*; and the healthiest motive is to be found in the purpose that the thing done will serve. When I speak of purpose I mean, of course, the purpose to the child, which will not always be the same as ours. His play is at first more real to him than our work. Making playthings, clothes, or furniture for dolls, for example, is the natural way to learn to make things of greater use. But the desire to take part in our work is a real motive too, and one to make the utmost use of from the first. And so at school; once we aim at getting reality into our work, endless ways open up. Geometry can again justify its name, and grow from actual earth-measurement. Composition can be a real letter to a real person. The drawing-class will miss a great opportunity if it does not produce designs to be actually carried out in wood or leather, or embroidery or pottery. The cooking class can not only cook a real meal for themselves and others to eat, but also, as a science class, discover in the laboratory laws to apply in the kitchen. A foreign language soon becomes real if used in a game or acted scene; while an acted play of Shakespeare or Euripides will not only give occasion for stage-carpentry and making of dresses, but will give more meaning to poetry than a hundred lessons in poetical analysis. And so on, and so on. This I take to be a chief part of our work as teachers, to think out ways in which all our work can be made more real, and thus appeal to primary motives, instead of having to create secondary ones of fear and emulation, and the like, by means of rewards and penalties and a whole system of class-room discipline.

But here the practical teacher in me protests. This is all very well, he says, and, so far as it goes, highly desirable. But can all our school work have such a practical purpose? Must not much of it, indeed most of it, be merely preparatory, merely the practice necessary for the later attainment of a purpose at present largely, if not wholly, unrealised by the child? Is there to be no place for the repetition that makes habit, the practice that makes perfect, the humdrum doing of things for the sake not of the result produced, but of the power of doing; no place, for example, for copy-book writing and playing scales, for flat-washing and shading from the cast, for making practice joints, for exercises of all kinds—in a word, for drill? You may think me very old-fashioned, but I believe there is to be a place, and even a considerable place, found for all these things, though not where they are usually put, at the beginning. First, there must be the desire, the motive that leads to the attempt, however feeble at first its realisation. At first this is all; but the child will not long remain content with his attempts. It is our part to see that he does not remain content, to set up not perfection, but a little more perfection, as a possible goal. So will come the gradual realisation of the cause of failure and of the need of technique. And then is the time for drill. Drill, if it means only formal training, insistence on technique where there is no purpose, is the very negation of education as we understand it. Instead of using and creating initiative, such training only breaks the will—and we have given up, I trust, thinking that this phrase embodies the first duty—or the second or the last, for that matter—of the educator. Drill—need I say that I am now using the word to include a great deal more than physical exercises?—drill is a necessary part of education, but as supplementary to free exer-

cise, not as a substitute for it; as a means recognised as necessary to attain an existing purpose. I do not mean that we are never to set a class to do any kind of exercise until we are sure that all clearly recognise its purpose, still less that we are never to tell a child to do anything without first arguing with him as to its desirability. But I do mean that we have so far failed in our part as teachers if, in the first place, we are not utilising some motive that reaches beyond the lesson, and have not awakened some sense of purpose that gives even the necessary drudgery a meaning and an aim; and no less do we fail if, in the second place, we do not see to it that there is so much endurance and so much concentration of energy as is required to bring that purpose to realisation.

To a few this or that particular form of drill will be a pleasure from the first; to a few it will remain irksome to the end. We have to see that there is sufficient variety of purpose, so that none may fail to find some interest, and I would add too, though this happily usually settles itself, some form of drill undergone from other motives than pleasure! Hence the need for a much wider range of subject-matter than is usual at school. We hear wails on every side over this and that subject that has to be included in the modern curriculum. How can we teach, rises the bitter cry from the overworked teacher, how can we teach all the arts and all the crafts, all the sciences and all the languages that are demanded at the present day? Well, of course, we cannot; we must select, but we must select on a different principle. We must have something representative of each kind of knowledge, not four languages or four branches of science, and little else. And, at first especially, we must not limit too rigidly the subject selected; handwork must deal with other materials than only wood; a study of all the aspects of nature round us must precede the study of any particular branch of science. If our object is to promote individuality and initiative, we must have a wide range of general training in order to give each individuality an opportunity for self-realisation. And so, of course, with games no less than with work. Cricket may for one reason or another be good for all, but there are plenty of other outdoor pursuits good too, and on some at least of our afternoons we must provide opportunity for these, and allow a large freedom of choice. But whatever the subject selected, whether by us or by the child, we must see that it is carried far enough, and, with sufficiency of drill, to ensure that there shall be at least so much realisation before the time comes when it may be abandoned, as both to establish a working habit and to give a basis of experience for further choice.

Then comes the third stage of education, covering the period of youth, when the chief lesson to be taught is responsibility. I have dwelt upon the need of drill of all kinds in the preceding stage; in this I would insist no less strongly upon the need of freedom to follow out work of one's own choice. There are other good reasons for narrowing the course of work at this stage, and for selecting one subject or group of subjects for much more intensive study; but the only one that concerns me now is the value of so doing from the point of view of our main purpose of developing initiative. What I have been pleading for in the earlier stages that we have been considering is, first, an appeal to primary motives by letting children make things of real use, and seeing that what they do has a real meaning to the doer; secondly, a wide range of activity in order to awake as many interests as possible; and thirdly, an insistence on the necessary practice and drudgery required for the realisation of any purpose. But though these things, strong motives, wide interests, and habits of work, are components of the power of initiative that we desire, all that has yet been done is only the necessary preparation.

Now has to come the practice of the power itself in the freer

choice of occupation, the more voluntary application to the far severer work now at once possible and requisite, and the acceptance of responsibilities that involve wider purposes as well as greater powers. And this for two reasons. Hitherto the exercise of the child's initiative has necessarily, as I believe, been dependent on his environment as arranged by us; it has now to grow independent of our control and even of our suggestion. And, in the second place, it has as yet been chiefly concerned with the satisfaction of his own needs and interests; it has now to become more consciously directed to a social purpose. Our part, then, at this stage is to see that the directed activities of the earlier stage, which for shortness' sake I have spoken of under the name of drill, shall now give place to self-directed activity. We must allow, that is, much more freedom of choice with regard to both the main line of work to be followed and other interests; we must allow much more freedom of individual effort, require much unaided preparation of work, apply the test of an individual rather than of a class standard, see that each holds himself responsible for success or failure, and so thinks out for himself the best means to reach his end, instead of relying solely on us to do so for him. Our real failure is shown not by the boy who cannot do a good examination, but by the boy who goes through school to the end still thinking it our business to *make* him work. We have failed, failed signally, whatever honours he may take, if we have not made him feel that success or failure depends upon his own efforts and the use he makes of his opportunities, not on anything that others can do for him; and secondly, if we have not made him feel that the chief motive for effort lies not in his own personal success, but in the desire to be of use. It is this that makes the last years of school so especially valuable to boy or girl, and so specially delightful to the teacher. And this last lesson learnt, the teacher's work is done.

HISTORY AND CURRENT EVENTS.

EDUCATION of the young has come largely under the control of the State in European countries, and, therefore, into the quiet of the schoolroom have entered the contests of those who may be quite ignorant of children and of child nature, but have ideals and desires as to the young citizen and his training. France has lately made it all but impossible for religious orders to have anything to do with education. What was Poland is suffering from the language difficulty, and because Germany insists on the exclusive use of German in those districts of Poland which were restored in 1814-5 to Prussia out of her spoils of 1772-1795, she has, at least for the present, persuaded Russia to withhold the concessions the Tsar was recently about to make in Polish schools to the national sentiment. Germany's fear is that, if Russian Poles are taught in Polish, German Poles will want the same. The rulers of Germany and Russia understand each other's desire to absorb their shares of Poland into their own respective nationalities. Austria-Hungary, which is not a nation, must treat her Poles differently.

THE education question has also led to a discussion in Canada which helps us to realise the nature of the British Empire and the endlessly various relations between its parts. The Dominion authorities are giving "provincial" powers to certain hitherto unorganised territories of the West. What amount of control should the new "provinces" have over matters of education, especially in reference to certain Roman Catholic schools there? Mr. Borden, leader of the Opposition, "held that educational matters belonged absolutely to the provinces. He moved an amendment setting forth that the new provinces were entitled to and should enjoy full powers of

provincial self-government, including the power exclusively to make laws relating to education." Compare this with Mr. Lyttelton's reply to a complaint in the British House of Commons of the treatment of aborigines in West Australia. He "agreed that the state of things referred to was deplorable," but added: "the House should not forget that this matter concerned a self-governing colony which was as to its internal affairs substantially independent." Canada existed before the provinces; West Australia existed before Australia. The relations between the Empire, the federations, and the members thereof, are worth attention.

"THE mixing up of politics with religion was odious. Both were corrupted." So said M. Deschanel in the French Chamber of Deputies on March 23rd. The previous day, the German Emperor said at Bremen, "We are the salt of the earth, but we must prove ourselves worthy of this high calling," for, as he had just previously remarked, "Our Lord and God would never have given Himself such pains with our German fatherland and its people if he had not predestined us to something great." The two statesmen are expressing more or less directly two of the solutions to the old Sphinx riddle of the relations of Church and State; and we do not intend, of course, to discuss them. But we commend them to our readers for meditation with a view to a perfect comprehension of their meaning, and of the attitudes of the Frenchman and the German. Meanwhile we ask, would these have been their opinions if the Franco-German war of 1870-1 had ended differently? What is the nature of the religion of the German Emperor and people? Is it like that of the Israelites of old, to whom Jehovah had given a land to dwell in, flowing with milk and honey?

THE Emperor Francis Joseph of Austria was born in 1830, a year of revolutions. When he was eighteen years old he was called to rule the dominions of Austria-Hungary because his uncle, the Emperor Ferdinand, was driven to abdicate by the revolution that put an end to the government of Metternich. In 1867 the Magyars obtained a recognition of their difference from the other subjects of the Emperor, and he was crowned King of Hungary at Ofen. Since that year the relations between Hungary and the rest of Austria-Hungary have been regulated by a compact which arranges a parliament for each, and a joint "delegation" for common affairs. The arrangement has not brought about perfect harmony, and of late years there has been much conflict, for the Magyars are wanting more economic and other independence. The aged Emperor has lately returned to Vienna "after sixteen days of fruitless effort to solve the crisis." We may profit by a comparison of the Austro-Hungarian crisis with that of Sweden-Norway to which we referred last month, and by speculating as to the results of the death of Francis Joseph. Some say he is the only link between the mutually jealous parts of his heterogeneous dominions.

AT the International Congress on the Teaching of Drawing, held at Berne last year, it was decided to hold the next session in London in August, 1908. At the Berne meeting a British and American Mutual Correspondence Association was instituted. The following are the objects of the Association:—(i.) To institute a link of communication between teachers of drawing in the United States of America and in Great Britain and her Colonies. (ii.) To break the ground for the next international congress. (iii.) To make possible an interchange of literature, to promote the best methods of instruction in drawing. The association will publish a semi-annual bulletin, giving full information as to the plans adopted for the next international congress. Further information may be obtained from Mr. J. W. Topham Vinall, 21, Grafton Road, Acton, W.

ITEMS OF INTEREST.

GENERAL.

THE negotiations have now been completed by which, under certain conditions, the Higher Examination of the Oxford and Cambridge Schools Examination Board and the Oxford Senior Local Examination will be accepted in lieu of the London Matriculation Examination, and the London Matriculation Examination will give exemption from Oxford Respondsions. A similar arrangement for the mutual recognition of certificates with Cambridge has also been concluded.

THE new regulations recently issued by the War Office, under which commissions in the Army may be obtained by university candidates, provide that commissions shall be allotted each half-year to the University of London. To satisfy the requirements of the regulations, the Senate has appointed a Nomination Board for Military Commissions who will nominate qualified students for commissions, and arrangements have been made for the instruction of candidates in military subjects. To be eligible for a commission, a candidate must have graduated as an internal student in one of the following faculties:—Arts, Laws, Science, Engineering, and Economics. Before such a student can be nominated for a commission he must, as a rule, have attended the various courses of instruction in military subjects in the University, and he must have been attached for two periods of six weeks, or for one period of twelve weeks, to a Regular Unit.

DURING the debate in the House of Commons on the Consolidated Fund Bill, Mr. George White called attention to the slow progress of secondary education. He contended that the influence of the private schoolmaster is manifest in various schemes issued by the Board of Education, and said he is jealous of anything that apparently places difficulties in the way of the poorer children from our elementary schools receiving the advantages which a secondary education would give them. Dr. Macnamara also criticised the recent regulations issued by the Board of Education in regard to secondary education. The purpose of these regulations is, he maintained, to set up a socially select class of schools for the middle and professional classes instead of creating a compartment which would fit in symmetrically with the whole scheme of national education to be used by all classes of the community, if they had the capacity, quite irrespective of their social standing. The Board of Education, for instance, lays it down that municipalities could not be allowed to have a secondary school in which the fees are less than £3 a year. Such a minimum at once transforms, said Dr. Macnamara, the provision of secondary education in industrial and working-class communities into a class institution. It is, he continued, a preposterous regulation, and a gross piece of impertinence on the part of the Board of Education to dictate to great municipalities the fees they should charge in schools largely supported out of their own rates. Sir William Anson, in replying, said he thought the indignation of Dr. Macnamara was not altogether justifiable. It is no compliment or benefit to the working classes to enable them to send their children to a school which is a secondary school in name but an elementary school in reality, and the Board has been at some pains to define what a secondary school should be. Schools, unless they are endowed, must depend upon the parliamentary grants, the rates, and the payments of scholars, and the Board considers that fees should be paid, and endeavours to determine the amount of the fee by the conditions of the locality and the incomes of those who wish to send their children to the school.

A STRONG appeal to the public on behalf of Bedford College for Women has been made by a representative committee, including Lord Rosebery, the Chancellor, and Dr. P. H. Pye-Smith, the Vice-Chancellor, of the University of London. This college, which is a school of the University of London, must before long come to an end unless it can obtain a large amount of public support. It can only be maintained by the purchase of a fresh site and the rebuilding of the college. A freehold site and a new building are essential, and it is estimated that their cost may amount to £150,000. Experience has shown that the fees of the students and the allotted share of the Treasury grant to University colleges are not sufficient without additional support to carry on the work of the college, the cost of which is constantly increasing. To make the work fully effective it is desirable to obtain £100,000, or the equivalent income. The Princess of Wales has promised a donation to the funds. Lady Tate has promised £10,000 for a library to be called after the late Sir Henry Tate.

THE Board of Education has issued a list of twenty-four holiday courses which will be held on the Continent at different times during the present year, but mostly in the summer months. Six of the courses are in Germany, viz., Greifswald, Jena, Königsberg, Marburg, Neuwied, and Salzburg; four in Switzerland, viz., Geneva, Lausanne, Neuchatel, and Basle; one in Spain, viz., Santander; and the rest are in France, viz., Besançon, Tours, Honfleur, Paris, Grenoble, Nancy, St.-Servan-St.-Malo, Villerville-sur-Mer, Boulogne, Caen, Bayeux, Lisieux, and Dijon. The paper issued by the Board of Education gives the date of each course, the fees, return fares from London, lowest cost of boarding, principal subjects of instruction, address of local secretary and other details of importance to intending students.

A COPY of the programme of the holiday courses to be held at Greifswald from July 10th to July 29th has reached us. The courses are arranged by a committee of professors of the University of Greifswald, and the subjects cover an extensive field of interest in literature, art and science. Teachers or students who contemplate attending one of the continental holiday courses this year could not do better than send for a copy of this programme to Prof. Bernheim, "Ferienkurs," Greifswald.

THE London Geological Field Class, conducted by Prof. H. G. Seeley, F.R.S., began its twentieth year's season on April 29th, with a visit to the North Downs at Betchworth. The field class, which is carried on continuously on the Saturday afternoons in May, June and July, affords practical teaching in geology by studying direct from nature the structure and modes of occurrence of the rocks in the basin of the Thames and adjacent country. Further particulars may be obtained from the secretary, Mr. J. W. Jarvis, St. Mark's College, Chelsea, S.W.

THE King's Scholarship Examination for 1905 will, as already announced, be held on December 12th, 1905, and the following days. Candidates are to be allowed, however, to have the option of presenting themselves for an alternative examination. This will be the King's Scholarship Examination for 1906. It is to be held in two parts. Part I. will be taken in December, 1905, and will be open to candidates who intend to complete their examination by taking Part II. in April, 1906. No candidate may proceed to the second part of the examination who has not satisfied the examiners in the first part. The second part of the examination will be held in the week immediately preceding Easter, 1906, at training colleges and such other places as may be necessary. There will be no complete

King's Scholarship Examination in December, 1906. A detailed syllabus showing the further changes which it is proposed to introduce into the 1907 examinations will be issued shortly.

THE report adopted at the recent annual meeting of the Froebel Society stated that the number of members at the close of the year was 752, an increase of 33 on the previous year. After the business meeting of members a general meeting was held, at which the new president, Mr. J. H. Badley, headmaster of Bedales School, read a paper on "The Teacher's Place in the New Education," which is published in an abridged form in another part of the present issue.

THE Education Committee of the London County Council has presented to the Council a report on the provision of additional secondary schools. The secondary schools in the county, though for the most part good in quality, are admittedly far from being adequate in quantity. According to the best information, there are within the administrative county about 88 secondary schools for boys or girls which are usually recognised as more or less of a public character. About half of these receive grants from the Board of Education and the Council. The Council's scholars have at present the choice of 79 of them, but only about 60 contain any large number of these scholars. They appear to provide accommodation in the aggregate for about 30,000 pupils. There are about 2,000 of the Council's scholars in attendance. The school buildings probably represent a capital value approaching a million sterling, and the total value of their property and endowments must exceed five millions sterling. The total revenue of these schools from all sources seems to reach £400,000 a year, of which £120,000 is derived from endowments—the bulk of which is enjoyed by the richer half of the schools, few of which receive grants; £220,000 from fees and miscellaneous items; £20,000 from Government grants; and £40,000 from the grants and payments for scholars made by the London County Council.

THE London Education Committee proceeds to point out that it is difficult to estimate with any precision the secondary school accommodation that ought to exist in London, there being no statistics available. But they compare the estimated aggregate accommodation in the 88 schools which are more or less public in character—namely, 30,000—with the figure of 12 per 1,000 of the population (which is that usually adopted as a normal standard), or, say, 55,000. There can be no doubt that a large extension of the supply of public secondary schools within the next few years (and by the Council) is inevitable. In the last session, 1,900 county scholars were appointed, and for these suitable vacant places have been found, though with some difficulty in the case of girls in certain districts. In July next the Council will probably award 4,100 scholarships. Additional places in excess of those found last year will therefore have to be found in September or October next for about 650 boys and 1,550 girls. The best estimate indicates that there will probably be sufficient and suitable accommodation for all the boys so far as the requirements for the year 1905 are concerned, but that additional accommodation for girls should be provided by September or October to the extent of about 1,000 school places.

A FULL and detailed report on the whole of the 438 non-provided schools in the county of London has been presented to the London County Council. This report is the result of the Council's decision in November, 1904, that the survey and inspection of non-provided schools should be carried out as rapidly as possible, so that the Council might be able to deal with the question as a whole. Some idea of the magnitude of

the work may be gained from the fact that the report, with its appendices, consists of nearly 1,200 pages of closely printed matter. Each school has been separately surveyed from a structural point of view, and tests have been made of the drains of each individual building. Each school has also been inspected in relation to the character of the educational work carried on in it, and the steps necessary in order to improve its educational efficiency; and the report contains recommendations which have been framed as the result of this survey and inspection. With the report is also submitted a carefully prepared map showing all the London County Council schools and the non-provided schools in the county of London, distinguishing those which it is suggested shall be declared unsuitable for the purposes of public elementary education.

FROM the report which precedes the recommendations it is clear that the Education Committee of the London County Council recognises that a large amount of exceptionally good teaching has been done in schools the buildings of which the Committee have had no hesitation in declaring to be unsuitable. Many detailed proposals for reorganisation are made, and the main difficulty of dealing with the schools in this respect appears to be the fact that a very large number of them are exceedingly small. This renders good organisation difficult and economical administration almost an impossibility. Where definite reorganisation is proposed the suitability of the building, the arrangement of the offices, and the ability of the teaching staff have been the main factors in determining their action. The Committee makes detailed proposals for the improvement of the number and quality of the teaching staff. In doing this, it has worked on two main principles: (1) the desirability of appointing fewer teachers of low qualifications, and (2) the desirability of inducing such teachers already in the schools to take steps to improve their qualifications. In respect of each school what is called a "fixed staff" is recommended for the year 1905-6, and the staff to which the Committee considers the school will eventually be entitled in order efficiently to perform the educational work expected of it is also laid down. Whereas on May 1st, 1904, there were in non-provided schools 4,589 teachers, of whom no fewer than 800 were supplementary, and 1,597 were uncertificated, there will eventually be in the smaller number of schools left 3,551 teachers, of whom none will be supplementary, and only 673 will be uncertificated.

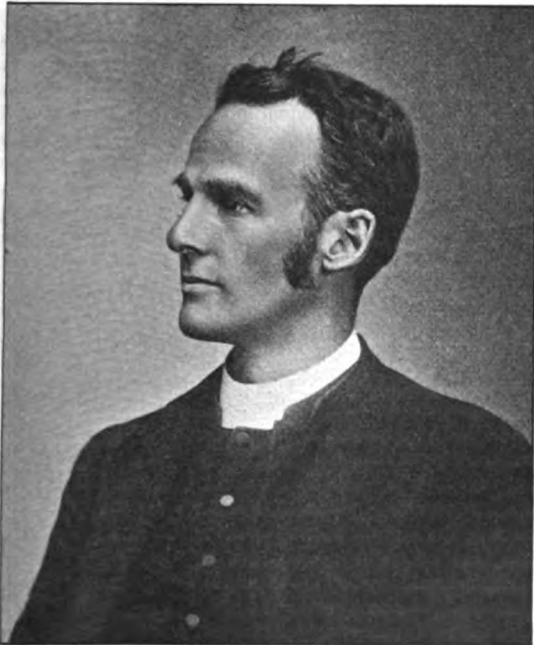
As regards the structural conditions of the schools, 92 schools are considered wholly unsuitable, and in addition there are 29 separate departments of other schools which in the opinion of the Education Committee cannot be regarded as satisfactory. The total number of departments declared unsuitable is 229, comprising 63 boys' departments, 62 girls' departments, 78 infants' departments, 20 mixed departments, and six combined departments. The total number of places lost on account of the closure of schools amounts to 41,884. In regard to the results of the testing of drains, it appears that no less than 342, or 78 per cent., of the drains tested have been found unsatisfactory. Eighty-nine failed under the water test, 30 under the smoke test, and 218 under both. In 26 cases the Council has been met with a refusal to allow tests of any kind, and in seven cases the water test was objected to, although other tests were allowed. As regards the accommodation which non-provided schools should be held to provide, the Council has adopted what is known as the "10 square feet basis." This means that 10 square feet of floor space is allowed for each child, and on this basis, and in consequence also of the conversion of certain rooms into halls and the disuse of unsuitable rooms, the accommodation in existing schools is reduced by 26,940 places. With regard to the financial effect of the proposals

made, it appears that the total annual additional cost to the Council which would result from the carrying into effect of the Committee's proposals would amount to £224,000. Further, it appears that the total cost to the Council of the transfer to it of the duty of providing for the elementary education of children now accommodated in non-provided schools will amount to £523,495 a year.

THE Lecturers in English, French and German in the University of Lund commence this month the publication of a monthly review in the three world-languages, English, French and German. Prominent features of the new review will be an attempt to co-ordinate the teaching of those three languages (to which one-third of the school-week is devoted in the higher forms of Swedish schools) in both their grammatical and their literary aspects, and practical comparative bibliographical articles of the kind with which readers of *THE SCHOOL WORLD* are familiar. Though the *Skandinavisk Månadsrevy* will be mainly intended for Scandinavian and other non-English teachers, these features may perhaps interest British teachers and students of French and German. Further particulars may be obtained from the British Manager of the new periodical, *Universitetslektorn*, C. S. Fearenside, Lund, Sweden.

UNDER its new editor the *Morning Post* is devoting much attention to educational topics. It is to be hoped that the prominence which is being given to matters affecting all kinds of schools in the Friday issues of our contemporary may be copied by other great journals, for in this way it should prove possible to develop a real and widespread interest in education among all classes of newspaper readers.

CANON THE HON. EDWARD LYTTTELTON, Headmaster of Haileybury College, whose portrait we publish, has been chosen



From a photograph by Messrs. Elliot and Fry.]

CANON THE HON. E. LYTTTELTON, M.A.

to succeed Dr. Warre as Headmaster of Eton. Canon Lyttelton's educational work is well known to our readers, and his appointment has met with general approval.

MR. J. H. HICHENS, Headmaster of Wolverhampton Grammar School, has been appointed Headmaster of the King Edward VII. School, Sheffield.

MISS C. GRAVESON, of the Liverpool Day Training College, has been appointed vice-principal and mistress of method, and Prof. T. Raymont, of Cardiff University College, vice-principal and master of method, in the new London University Day Training College at New Cross.

SCOTTISH.

THE spring general meeting of the Classical Association of Scotland was held this year in Aberdeen. Prof. G. G. Ramsay in his presidential address put in a strong plea for maintaining the traditional connection between the parish schools and the universities. The tendency of recent legislation and of departmental action is, he said, towards undue centralisation, whereby the benefits of secondary education will be shut off from the poor but ambitious youths of the more isolated rural districts. Prof. A. W. Mair, Edinburgh, dealing with the teaching of Greek, said that the attack on compulsory Greek at Cambridge has been triumphantly refuted, but no one knows when the attack will be renewed. If reform is to come, as come it must, it is from the universities themselves that it must come. An improvement in the methods of teaching is the first reform that must be undertaken. Examination papers ought to encourage more practical and interesting methods. The rigidity of the present system is the greatest bane, and he pleaded for greater originality in teaching. Prof. Mair showed how valuable time is wasted in teaching useless rules and exceptions in the Greek grammar. Prof. Harrower, Aberdeen, and Prof. Burnett, St. Andrews, amongst others, expressed hearty sympathy with Prof. Mair's views.

THE fifth biennial congress of the Scottish Class Teachers' Association took place this year in Glasgow. The Lord Provost and magistrates of the city gave a public reception to the delegates in the municipal buildings. Mr. Alexander Small, president, in the course of an able address, said that education is suffering at the present moment from over inspection, and under the enlarged School Board to be created by the new Bill there is a danger that this evil may be still more intensified by the appointment of officials to estimate and oversee the work of the teachers. His Majesty's Inspectors are perfectly competent to do all the inspection that is required, and Mr. Small's only complaint against them is that there are too many of them, and too many of them young.

THE committee in charge of the Vacation Courses in Modern Languages, to be held in Edinburgh University in August next, has now completed its arrangements, and an elaborate and exhaustive syllabus of work has been prepared. To students of French and German, the scheme offers some sixty hours of theoretical and practical instruction in each of these languages, including literature, language, and phonetics. The committee has been fortunate in securing the services of distinguished professors and lecturers, several of them with a European reputation, such as Profs. Henry Sweet, Paul Parry, and Wilhelm Victor. Further particulars of these courses may be had from Prof. Kirkpatrick, the University, Edinburgh.

LORD BALFOUR OF BURLEIGH initiated an interesting discussion in the House of Lords in regard to the new minute on the Training of Teachers. While approving generally of the principles of the new minute, he wished to obtain from the Government some guarantee that the religious instruction of the students would always be carried on as under the existing training colleges. As

there is an Education Bill at present under consideration, he suggested that the Government should postpone action until the Bill has passed into law, when it will be possible to get some statutory guarantee for the permanency of the policy outlined by the minute. The Secretary for Scotland, in reply, said it is entirely unnecessary to introduce into the minute a clause conserving the *status quo* in regard to the religious instruction. It is impossible for any Government to bind their successors in this way. The conditions of transference will presumably be embodied in a legal document, and will thus offer a much stronger security for permanency than any minute. He refused to consider the postponement of the minute till the new Bill is passed, as circumstances demand the immediate consideration of the training college problem.

THE School Board of Glasgow has issued a circular to members of Parliament urging upon them the importance of passing the Education Bill for Scotland this session. The Board recognises that there may be differences of opinion on one or two matters of detail, but thinks that the general agreement on the main principles of the Bill should make the adjustment of minor points possible without endangering the whole Bill, which has approved itself to all interested in the progress of education in Scotland. In a memorial to the Secretary for Scotland, the only amendment of importance suggested by the Board is that the liabilities of the existing School Boards, and all future expenditure, capital or otherwise, shall be a charge upon the new educational districts, and shall be met by a uniform rate over each district.

CONSIDERABLE friction and divergence of view has existed for some time in the three north-eastern counties of Aberdeen, Moray, and Banff, between the great majority of teachers and School Boards on the one hand, and the Education Department and the Secondary Education Committee for the counties on the other. The Secondary Committees, following the lead of the Education Department, are discouraging higher education in the ordinary parish schools in order to concentrate it in convenient centres where better equipment and increased staff can be provided. Teachers and School Boards contend as against this that the parish school should be the centre for higher instruction for all who are not able for economic reasons to attend the secondary centre. In support of this plea, a formidable list of successes on the part of such schools at the Leaving Certificate Examinations—the recognised standard for secondary education—can be produced for almost every parish school in the counties. Indeed, the number of passes obtained by small schools in outlying districts would put to shame many higher-class schools in populous centres.

THE present position is further complicated by the attitude of the Governors of the Dick Bequest, who strongly support the teachers and School Boards. This trust, which has been in operation for about 100 years, has helped to make the three north-eastern counties the envy of all Scotland in matters educational. The trustees, by means of subsidies to parish schools and parish schoolmasters, have long ago realised the ideal the Department is only now tentatively putting forth, viz., a graduate teacher for every school. These teachers have, as a rule, a passion for education and a lynx eye for "lads o' paints," to whom they willingly devote much of their leisure time. From this it has resulted that the counties have drafted a larger number of poor but capable lads to the professions and the higher ranks of the Civil Service than any other district in Scotland. This system brought higher education to the door of the very poorest, and its supporters contend that it is a counsel of perfection to ask such to proceed to the central school. The poor

must get their education near their homes or go without it altogether. The Department in the present instance is making the mistake of not distinguishing between the educational problem in towns and in rural districts. Differentiation of school and school according to function is a wise and economic principle to apply in towns; it is a fatal thing to introduce into rural districts and means a death warrant to the ambitious poor.

IRISH.

TRINITY COLLEGE, Dublin, has published in detail its new scheme of entrance exhibitions. Up to the present time there have been awarded each October, as the result of a special examination held by the University itself, twelve Junior exhibitions of the value of £25 a year for two years. For the future there will be, at least for the next five years, three kinds of entrance exhibitions: (1) Twelve exhibitions, six of £20 and six of £15 a year for two years, on the foundation of the Board of Trinity College; (2) ten exhibitions of £50 a year for two years on the foundation of Sir John Gardiner Nutting, Bart., for students who have, for the previous two years, attended at an unendowed Irish secondary school. The latter class of exhibitions is at present offered only for the next five years, but both classes are an attempt to co-ordinate Intermediate and University education, and will be awarded on the result of the yearly Intermediate examinations of the Intermediate Education Board, which are at present held in June, and the results of which are published in September. These exhibitions will be open to Senior and Middle-grade candidates who obtain either prizes or exhibitions in the Intermediate examinations. The election will be made by the Board before October 17th. (3) The Board will also continue to hold its own examination in October for sixteen Junior exhibitions, twelve of £20 and four of £15 a year for two years. It is certainly a large scheme for attracting promising pupils from Intermediate and other schools into Trinity College.

WE shall have, for the next five years at any rate, thirty-eight annual exhibitions instead of only twelve as in past years. The value of the majority of them, however, is small and they are only for half the college course. But at the end of two years in college, candidates may compete for one of sixteen Senior exhibitions, twelve of £20 and four of £15 a year for two years, while after entrance they may compete for Foundation Scholarships, which average about £60 a year for five years, and after the present year the Board proposes to alter the date of the examination for Sizarships, which are limited to students under nineteen who have not matriculated, from June to October, in order to give students who have been awarded the new exhibitions an opportunity of competing.

THE Intermediate Schools have not at present taken kindly to these proposals. Grave exception is taken to the awarding of exhibitions to Middle-grade students, as, being under the age of seventeen, they will be immature and not fit as a rule to enter a university. They will certainly not have finished the school course as laid down by the Intermediate Board, and it is on the records of the Intermediate Commission that it is only by completing the course that a student derives the full benefit of Intermediate education. On the other hand, the Middle-grade appears less prominently in the Board's proposals as finally issued than it did in its earlier suggestions, as there are no exhibitions specially earmarked for them, and it is probable that very few Middle-grade students will send in their names for them, as a Middle-grade exhibitor of the Intermediate Board has before him the greater attraction of the prospect of a Senior-grade exhibition of £50 or £40 in the following year. Still the schools object also to exhibitions awarded to Senior-grade

students as taking their pupils away a year earlier than at present, but this, though a grievance to the schools, may not be any hardship to the pupils or to education, and would certainly be met if the Board would for the present, while the experiment is in its initial stage, allow an exhibitioner the option of postponing his entrance for a year.

A PUBLIC announcement has been made that the Board of Trinity College has also appointed a committee to report upon the possibility of improving the systems of teaching and examination now in force there. The committee is composed of two Senior Fellows, two Junior Fellows, and two Professors. One part of its inquiry has reference to the reform of the Fellowship course. It should certainly take seriously in hand the tutorial system and the teaching given in lectures, especially to the pass students. If the Board wishes to attract students at an earlier age it should consider whether forty weeks' regular school tuition and supervision of five hours a day are adequately compensated by perhaps two hours a day of more or less perfunctory lecturing for twenty-four weeks.

THERE will be a large increase in the numbers of pupils entering in June for the Intermediate Examinations. Notice of intention to compete has been given by 10,270 students, viz.: 7,412 boys and 2,858 girls. The corresponding number last year was 9,166, viz., 6,717 boys and 2,449 girls.

WE understand that the Assistant-Commissioners, with the approval of the Commissioners, have consulted the heads of Intermediate schools through the Consultative Committee on the programme, but not on the rules, for next year, 1905-6. Various suggestions for improvement have been offered, and should suffice to prevent any of the glaring anomalies that have in some years disfigured the programme.

THE Association of Women Graduates has approached the Intermediate Board once more on the old subject of centre superintendents. They have called attention to the pre-eminent claims of assistant-teachers in secondary schools to the posts of centre superintendents, and beg that the Board will make a ruling that in future assistant-teachers only shall be eligible for these appointments. The claim is based on the superior qualifications of assistant-teachers from their profession and experience, and upon the inadequate salaries of Irish secondary teachers. This latter reason is fast becoming one of the scandals of Intermediate education, but will in no wise be remedied by distributing among teachers a few superintendentships.

WELSH.

MATTERS have reached a crisis in Merionethshire. The Board of Education has sent a communication stating that after consideration of the communications of the Education Committee and the arguments adduced on behalf of the authority by their deputation to the Board, it is satisfied that no valid reason has been shown why steps should not now be taken by the Board of Education to refund to the managers of voluntary schools expenses probably incurred by them during the period ended October 31st, 1904. A later communication states that in regard to those schools named there is owing to those schools the sum of £222. This sum is over and above the £251 which has been handed over to the schools from the Education Authority. The Local Education Authority, it is argued by the Board of Education, has thus, by handing over the parliamentary grant, acknowledged that the schools satisfied the conditions of Section 7 of the Act of 1902 (*i.e.*, as to repairs, &c.).

THE response of the Merionethshire Education Committee is to pass a resolution as follows:—"That we instruct our Secretary to deal with the question of repairs of the voluntary schools, and that he be now given full powers to give notices to managers to carry out the repairs required by the Committee's architect, and that in the cases of these schools which are structurally unfit notices be given that unless assurances are given within a month for their repairs that they will not be recognised as elementary schools by the committee."

THIS resolution was followed up and interpreted by the following:—"That this meeting of the Merionethshire Education Committee still adheres to the contention already advanced by them disclaiming any liability in respect of the maintenance of the non-provided schools and repudiating the right of the Board of Education to make any deduction from the grants payable by this Committee in respect of the cost of maintenance of non-provided schools in the county, inasmuch as schools were not on the appointed day, nor have they been at any time since, maintained in such a state of repair as to entitle them to receive parliamentary grants. Further, that they do hereby protest against the action of the Board of Education in meeting the claims of the Llawr-y-Bettws Church School, Maentwrog National School and Tynant National School, and, whilst disclaiming liability in respect of the maintenance of such schools, reserve to themselves the right to take such measure as they may be advised to obtain a judicial interpretation of the Act." The above, of course, are test cases. It is expected that, for the twenty-four non-provided schools, the actual cost of maintenance over the grants paid will be deducted from the total sum in hand due to the county, and handed over to the voluntary schools. This sum in the hands of the Board of Education due to the county is estimated at £2,000. The balance will be paid to the county, and apparently the County Authority will have to make up the sum deducted by the Board of Education by drawing on the rates.

THE Bangor County School for Girls in ten years has increased its numbers from 28 to 130 pupils.

THE Bishop of St. Asaph spoke at the distribution of prizes at Ruthin County School in favour of variety in Welsh education. It is good to have schools of the type of Llandoverly, Brecon, and Ruthin Grammar School. Boys should be encouraged to go to Oxford and Cambridge as well as Aberystwyth, Bangor and Cardiff.

PRINCIPAL GRIFFITHS has been speaking very clearly on the question of school examinations. The occasion was the distribution of prizes at the Cowbridge Intermediate School for Girls. He said there were two things which examinations did not test, viz., manners and character. Yet high character is more important than high certificates. He reminded his audience that the people of the United States manage to do without examinations, and asked the people of Wales if they are really satisfied with the continuance of our present system of testing the qualities of children simply by examination. There is one way out of the difficulty, but he was afraid it would not be adopted. His way out of it is to trust the teachers. The question should be put to Principal Griffiths whether the real difficulty is in the people of Wales. After all, is it not the teachers who most insist on the importance of a sign and seal on the result of their labours in some concrete form?

THE Director of Education in Monmouthshire is concerned with the results of the King's Scholarship Examination. Monmouthshire failures amount to 31 per cent., whereas the

percentage for England and Wales is 21 per cent. Of the Monmouthshire pupil-teachers who passed, 45 per cent. just scraped through. Of the rest, 18.4 per cent. passed in the second class, 80.6 per cent. in the third class. Certainly the Director has grounds for declaring that there is urgent necessity for an entire overhauling of the present arrangements.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

L. Biart, Monsieur Pinson. Edited by O. Siepmann. ix. + 147 pp. (Macmillan.) 2s.—This amusing story has been ably edited by Mr. Siepmann, who has considerably reduced it in order to make it of suitable length for the elementary section of his well-known series. Perhaps a short *résumé* of the earlier part of the tale might have been supplied with advantage. The text is carefully printed and the notes deal fully with all difficulties, particular attention being paid to the grammar in a very helpful manner. The list of irregular verbs occurring in the text is also valuable. There are appendices with sentences and passages for translation into French, and a vocabulary which we were surprised to find incomplete.

French Composition by Imitation. By Hubert Brown. 151 pp. (Blackie.) 2s.—There are many books for the teaching of French composition, but it is rare to meet with any novelty in them. This volume, however, does contain something fresh: a French passage is given with an English rendering, and two English passages treating the same subjects in a somewhat different way, but requiring the same words, phrases and idioms as have been used in the original passage. It is obvious that this affords good practice in composition. In addition, there are sentences for translation to illustrate various points of syntax, and exercises in free composition. The book appears to represent conscientious work on the part of a skilful teacher.

Larousse, Dictionnaire Complet Illustré. 804 pp. (Dent.) 2s. 6d. net.—Many teachers have regretted the bulky nature of the "little" Larousse, and it was therefore a happy thought which led to the publication of the dictionary proper, without the encyclopaedia, and in a neat cloth binding which is a great improvement on the boards of the ordinary edition. The numerous illustrations help to make the little volume most acceptable to teachers on reform lines, and the price is so low that they can recommend their pupils to buy it. It is the kind of book which will serve as a valued companion in their study of French throughout their school life.

French Idioms and Proverbs. By de V. Payen-Payne. x. + 248 pp. (Nutt) 3s. 6d.—We welcome the fourth appearance of this handbook, which its author renders more accurate and more generally useful with every edition. It makes quite interesting reading, and should be on the reference shelf of every French student.

The Teaching of Modern Languages. By H. W. Eve. 31 pp. (Nutt) 6d.—This is a reprint of the thoughtful and convincing article which the late headmaster of University College School contributed to "National Education: a Symposium" some years ago. His opinions are all the more worthy of consideration as he is no less distinguished a scholar in classics than in modern languages.

Select Tales of Hans Christian Andersen. Edited by H. J. Chaytor. viii. + 180 pp. (Blackie.) 2s.—This is a neatly-got-up edition of seven of Andersen's best-known tales, with

seven good full-page illustrations. In a "note to teachers" Mr. Chaytor recommends that questions should be asked on the text; among others he suggested "Welche Fremde kamen an seine Stadt?" which sounds queer. The notes are adequate; there are also exercises in translation, in applied grammar, and in free composition. The vocabulary seems good.

German Reader for Technical Schools. By E. F. Seckler. viii. + 116 pp. (Blackwood.) 2s.—There can be little doubt that such a book is needed, and with some revision and rearrangement Mr. Seckler's little volume may serve the purpose. It would be better to arrange the selections under the headings "Chemistry," "Physics," and "Miscellaneous"; at present they are mixed up. The spelling should be rendered uniform by bringing it into agreement with the best modern usage. Why the index on p. vii. should be reprinted *verbatim* on p. 75 we cannot conceive. The vocabulary is a careless production; it is not only incomplete, but words appear in the wrong order.

Lessing, Minna von Barnhelm. Edited by R. A. von Minckwitz and A. C. Wilder. xviii. + 202 pp. (Ginn.) 2s.—There was really no need for another school edition of "Minna von Barnhelm"; we have six or eight already. The one before us attains a respectable degree of merit; the editorial work is adequate, and the get-up is good. There is a German-English and a French-English vocabulary.

Hachette's Popular German Authors. (1) *F. Gerstücker, Herrn Malhubers Reiseabenteuer.* Edited by L. Hirsch. iv. + 59 pp. (2) *H. Seidel, Rotkehlchen, Hundegeschichten, eine Sperlingsgeschichte.* Edited by W. Ahrens. 54 pp. (3) *W. Hauff, Der junge Engländer.* Edited by A. Weiss. 55 pp. (Hachette.) 6d. each.—These three texts are well chosen, and make amusing reading for an intermediate class. Each volume contains a short account of the author, the neatly printed text, a vocabulary of the less common words, with notes on difficulties, and some German questions on the text to be answered in German. The third volume also contains grammar questions, and an English passage for retranslation.

Goethe, The Road to Italy. Edited by R. A. Allpress. 50 pp. (Blackie.) 6d.—This little volume in Blackie's "Little German Classics" includes that part of Goethe's "Italienische Reise" which describes his route from Karlsbad to Verona. Mr. Allpress prefixes a brief note on Goethe, and supplies capital notes; indeed, he has done his work exceptionally well.

Ernst von Wildenbruch, Vergnügen auf dem Lande.—Edited by Aloys Weiss. 73 pp. (Hachette.) 6d.—Prof. Weiss is earning the gratitude of teachers by his skill in discovering texts which are at once fresh and attractive. Wildenbruch's Humoreske is, indeed, almost farcical, and will cause much amusement in the class-room. The notes are incorporated in the vocabulary, which is well compiled. Sixty questions are given for oral practice: it cannot be said that these are quite satisfactory. We do not see the point of asking questions in this form: "Es folgt eine andre Geschichte; welche?" nor is much "oral practice" to be obtained from such a question as "Über welches Tier handelte es sich auf Seite?" (24).

Storm, In St. Jürgen. Edited by J. H. Beckmann. vi. + 120 pp. (Ginn.) 1s. 6d.—If this admirable tale is unknown to any teacher of German, we hasten to recommend it; it may well be compared to the same writer's *Immensee*. This is a serviceable edition, with good notes and a complete vocabulary. It is odd that no mention should be made of Rückert as the author of the lines, "Als ich Abschied nahm, etc." There are some sentences for retranslation which are not uniformly satisfactory; for instance, "I nodded friendly to our lady

friend," "She showed me the festal hall," "I do not know where he has that talk from." There are also Americanisms like "fall weather," "drug store," a house "on Krämer Street," etc. Yet we are almost reconciled to the editor who can still write the inspiring sentence, "My sister has her grandmother's lead-pencil." Long may she treasure it!

Classics.

Papers of the British School at Rome. Vol. II. Sixteenth Century Drawings of Roman Buildings attributed to Andreas Coner. By J. Ashby, junior. 96 pp., 165 plates. (Macmillan.) 30s. net.—Mr. Ashby has made an important find in the collections of Sir John Soane's Museum, London: a book containing architectural drawings of Roman remains dating from the early sixteenth century. The handwriting on the pictures is the same as that of a copy of a letter by one Andreas Coner, which lies amongst them. Nothing is known of Andreas Coner, except an inventory of his goods and library given in the appendix. Some of the drawings in the collection are practically identical with other drawings in chalk, apparently by Michael Angelo, which are most of them in Florence. A few of the pictures in the Soane collection are by another and later hand. The contents of the collection are: plans, tombs, elevations, architectural details, Doric entablatures, Ionic and Corinthian cornices and entablatures, mouldings, capitals, and bases. A number of these have been identified, but many have not, and the editor very properly decided to publish so important a collection at once rather than wait until he could discover all about them. A few of the chief subjects may be mentioned: the Coliseum, ground plan, quarter plan with measurements, second and third storeys without measurements, sections; a careful plan of the Baths of Diocletian; plan of the temple of "Minerva Medica," copy of a study for St. Peter's, doubtless by Bramante himself, an important drawing (there are also others of Bramante's plans of St. Peter's in course of building, and of other buildings); plan of a part of Varro's villa, no longer in existence; a very fine plan of the Baths of Caracalla; plans and elevations of the Cortile di Belvedere and Giardino della Pigna in the Vatican, which has many points of interest; a triumphal arch now destroyed, the Arco di Portogallo; elevations or restorations of the Arch of Severus; the Arch of Titus, the Pantheon, and a number of other existing buildings. This important volume is a worthy sequel to the first, published by the British School at Rome, and gives hopes of much excellent work to be expected in the future.

A Second Latin Course. By E. H. Scott and Frank Jones. viii. + 265 pp. Illustrated. (Blackie.) 2s. 6d.—We regret that we cannot speak with the same praise of this as of the authors' "First Course." This is based on Cæsar B. G. Book I., and it is a mistake to choose Cæsar as the first reading book. Illustrations are out of place; and if used they should not be inserted into the text, for they distract the attention. The book is not simply arranged; it is difficult to find what we want amongst the various tables and vocabularies; and the page has a confused and confusing appearance. On the other hand, granted Cæsar, preparation is made for reading the text by re-writing the text in short sentences. This is an old idea with Cæsar, but a good one. The pupil will also learn a number of useful proverbs and idioms. We are glad to see that all long vowels are marked. On the whole, this seems likely to be a useful book, better than many of those now in use; but it might have been much better.

Xenophon's Anabasis. By A. C. Liddell. With map, illustrations, and vocabulary. xxvii. + 126 pp. (Blackie's Illustrated Greek Series.) 2s.—Yet another edition of the Anabasis!

This contains an account of Xenophon's life and works, the entirety of the Anabasis, and a sketch of the Greek army. The last section is full of information, and useful; the Greek technical terms are given. The text is split up into sections (far too short), each with an English heading. Most of the notes are judicious, and the editor has given a number of appropriate quotations from Legard's "Nineveh and Babylon." There are, however, not a few unnecessary notes on grammatical details. Larissa, by the way, is probably a Pelorspian term for hill or fort, like "burgh;" why should Mr. Liddell imagine it to be a foolish corruption like "Billy Ruffian" for Bellerophon (p. 73)? Many of the illustrations are admirable; they include carvings from Nineveh, sling-bolts, and soldiers. But a Mycenaean scene (p. 26) has no business here at all.

Preface to First Greek Reader. May 1st, 1868. By John E. B. Mayor. 34 pp. (Cambridge: Macmillan & Bowes.) 1s. net.—"As a man of peace," writes Prof. Mayor, "I drew the sting of this preface in later editions. As we are again in a state of war, I venture to reprint it. ἀγαθὴ δ' ἐστὶ ἡδε Βροτοῖδιν." We are glad that Prof. Mayor has once more exerted his sting. The pamphlet makes good reading; full of interest, as all is that the author writes; full of out-of-the-way learning, quotations, allusions, not always to the point, but always entertaining. It is especially to be noted how intelligent was the forecast made by Prof. Mayor nearly forty years ago, and how early he advocated the very reforms which are now just beginning to be attempted. Prof. Mayor was one of the first to attack the dreary learning of grammatical details before a pupil begins to read. One suggestion, not yet tried, deserves mention: that in place of "compendious histories," a pupil should first learn thoroughly the cardinal dates, and a slight sketch or sketches, landmarks of history; and therefrom should pass to transactions of the original authorities.

English.

The Battle of Maldon, &c. By Dr. Walter J. Sedgefield. xxiv. + 96 pp. (Heath.) 1s. 6d. net.—Five short poems from the Anglo-Saxon Chronicle and (in an Appendix) two others from the same source in irregular metre are collected in this volume along with the better but still little known "Battle of Maldon." An elaborate and interesting Introduction is provided, and the notes and glossary are all that is necessary, while the bibliography is all that can be desired. A really elegant presentation of Early English literature.

Palgrave's Golden Treasury. 387 pp. (Macmillan.) 1s.—This edition contains in one volume the well-known two volumes which have been for so long the cherished friend of book lovers and students of English poetry. Probably no better anthology was ever made by anybody than Prof. Palgrave's work. To have it in a form which will go into the pocket, and for the low price of one shilling, is even in these days of cheap editions an undeserved blessing. As an anthology, ever since its first appearance this collection was assured of immortality from its quality. It ought now to find universal currency.

Scott's The Fortunes of Nigel, liv. + 733 pp. (Macmillan.) 2s. 6d.—To procure a reading book of nearly eight hundred well-printed pages for half-a-crown, consisting of one of Scott's novels with an editorial introduction, Scott's own introduction, notes by Scott, by the Editor, and by Mr. Andrew Lang, together with a good index, is really equivalent to obtaining Scott incredibly cheap; and these considerations alone ought to commend this volume sufficiently. We can give nothing but praise to the editorial portion of this volume, but, as on previous occasions in dealing with this series, we are compelled to wonder what wise and fruitful word of counsel has dictated its any-

mous issue. The editor may be a modest person, but we think him sufficiently able to deserve that his personality should be disclosed.

Tennyson's The Princess. By Ethel Fry. x + 137 pp. (Blackie.) 1s. 6d.—This edition, in spite of the limited extent of the editorial matter in the introduction, is to be generally commended. It is clearly and thoughtfully done. We are bound to extend special praise to the notes, and the appendix which deals with the various textual alterations in Tennyson's poem shows thoroughness of scholarship. The appendix on style and metre ought, we think, to have been fuller, and possibly more original.

The Story of the Glittering Plain. By William Morris. xvii. + 174 pp. (Longmans.) 1s. 6d.—The idea of issuing this beautiful production of Morris as a class book is a good one. It is no fault of this edition if Morris's purpose in writing it is not served in a far higher degree than he originally intended. It is supplied with a readable introduction in this case; but it is not burdened with notes. A few archaic words are made into a glossary at the end. The story, therefore, is the thing; and it is one to delight youthful minds and teach them far higher lessons than those of grammar or of philology.

The Paraphrase of Poetry. By Edmund Candler. xii. + 83 pp. (Bell.) 1s. 6d.—Paraphrasing, when it is well done, is a literary exercise of the highest value in training the mind to comprehend the exact scope of words and phrases. The pity is that often it is not well done. Mr. Candler's object is to clear up the usual vagueness in which this subject is wrapped in many minds. By stating some definite rules and principles, and illustrating these with rules and examples, followed by numerous exercises, he has produced a book of value. His contention is that it is easier to teach paraphrasing than good essay writing. In so far as either can be taught, we are inclined to agree with him, but it is not wise to forget that in both these branches of literary art the essential secret can never be taught at all. It is inborn. Still, much may be done educationally, and this volume is a great help to that end.

William Shakespeare, Poet, Dramatist, and Man. By Hamilton Wright Mabie. xvi. + 345 pp. (Macmillan.) 4s. 6d. net.—This is a new edition with a new preface, one of America's most distinguished contributions to the criticism of Shakespeare; and as four editions of this work have been called for within two years of its first issue, its success is as much beyond question as its value. It ought to be found on the shelves of all Shakespeare scholars, and will repay both perusal and a careful consideration.

History.

The Holy Roman Empire. By J. Bryce. lix. + 571 pp. (Macmillan.) 7s. 6d.—Forty years ago, Dr. (then Mr.) Bryce won the Arnold Prize at Oxford with an essay bearing the title of the "Holy Roman Empire." Since then the essay has grown into the thesis on that subject which is so well known to all historical students. Dr. Bryce has now gone very carefully through every word of his book, and on nearly every page the reader will find traces of the history of historical writing in the last forty years. Old authorities, such as Hallam, Palgrave, Sismondi, are no longer quoted, there is not so much moralising, epithets are changed from those of praise or blame to those of judicial characterisation, specially there is a more sympathetic treatment of the Papacy and the Catholic Church. The elementary student will find many additions intended specially for his benefit. Difficult allusions are changed into definite descriptions, what Dr. Bryce modestly calls a "chronological table

of important events" occupies twenty-nine pages, and the index is nearly double its former size. Specially large additions, sometimes of many pages, are made in the treatment of the German struggle against the Papacy in the 14th century, and Marsilius of Padua finds a place. The development of the electoral college is more fully treated. Arnold of Brescia and Cola di Rienzo occupy a much larger space, and there is an abundance of interesting matter added in the chapter on Maximilian and his attempts at reform. As the book has largely effected its purpose, there is less insistence on the anti-French and anti-Austrian views than was necessary in the older editions, and, what we imagine must have been an addition reluctantly made, three maps are introduced. To localise "the idea and the institution" in such a concrete way seems to jar on the mind of the reader: yet we are thankful for the information. We notice, however, that Dr. Bryce leaves as it was his account of "Canosa," apparently ignoring other views which represent Henry IV. as at least temporarily triumphant over the Pope. He also remains by his description of Charles IV. in spite of Prof. Lodge's attack thereon, and he still regards the Reformation as largely individualistic, though the tendency of recent treatment of that subject has been to emphasise the share of States and Governments, and the shortness of the period during which the movement was one of "liberty." The greatest changes, however, are in the story of the German Empire of the nineteenth century. This has been divided into chapters, largely rewritten and enlarged by a quarter of its original length.

The Story of the English People. By J. Finmore. viii. + 167 pp. (Black.) 1s. 6d.—A "simple introductory historical reader," with six illustrations in colour and thirty-three in black and white. The illustrations are good and the style of the letterpress is suitable, but the history is not so correct as Mr. Finmore's books on social England had led us to expect. He speaks of Simon de Montfort's assembly, e.g., as the first real Parliament, and tells the whole story of the Puritan revolution without a single mention of religion.

Short Stories from American History. By A. F. Blaisdell and F. K. Ball. xii. + 146 pp. (Ginn.) 2s.—Nineteen stories and incidents from the history of the U.S.A., pleasantly told and well illustrated, for American children of about eleven years of age. Questions for review, pronunciation of proper names and an index are added.

Murray's History of England. By M. A. Tucker. xi. + 410 pp. (Murray.) 3s.—A correct and straightforward piece of work, giving the usual narrative in short paragraphs. There is also a list of important dates, a number of genealogies, and an index, besides maps and plans. The preface promises more than the book fulfils in the direction of "those wider movements of European history of which our own history forms only a part."

Syllabus of Continental European History. By O. H. Richardson and others. iv. + 84 pp. (Ginn.) 3s. 6d.—A publication intended apparently to supplement lectures at Yale University. The pages are printed only on one side. There are bibliographies. The range embraces the Christian era to 1870. The work is useful as a list of topics for lessons.

Science and Technology.

Popular Star Maps. By Comte de Miremont. xi. + 8 pp. + 10 Star Maps and their Key Plates. (G. Philip and Son.) 10s. 6d. net.—It would be difficult to produce a more attractive and serviceable collection of star-maps than that contained in this atlas. The maps are on the Gnomonic projection, in which the observer is considered to be at the centre of a cube. Upon

the sheets representing the top and bottom faces of the cube, stars in the neighbourhood of the north and south celestial poles are shown. The stars projected on the four remaining faces of the cube are shown on four separate sheets; and there are also four overlapping maps to connect consecutive sheets. The stars are shown by asterisks on a dark blue ground in each case. Facing each of the maps is a chart on the same scale containing the names and designations of stars and constellations. Divisions of Right Ascension, and months when the star groups are visible, are indicated around the edges of the maps. There are about 250 stars upon the maps, this number comprising all stars down to the third grade of brightness or magnitude, and a few of the fourth. All the stars clearly visible to ordinary eyes are thus included. Of course, it is impossible to represent the relative brightnesses of most of the stars by asterisks of four different sizes; for between one magnitude and the next there are many shades of brilliancy. The only practicable plan is to represent a star of magnitude, say, 2.2 as the second magnitude, and one of magnitude 2.8 as the third magnitude. This plan appears to have been followed in the present maps. In the introductory matter there is a description of the projection used, a list of constellations, an alphabetical list of stars shown on the maps, and a catalogue of these stars giving magnitudes and co-ordinates. Those who desire to become familiar with the face of the sky, or to encourage such observations in others, do not need to look for a better guide than the one available in this atlas.

Health at School. By Dr. Clement Dukes. Fourth Edition. xxvi. + 606 pp. (Rivingtons.) 10s. 6d.—When a work of this kind has reached its fourth edition, it needs no introduction to the public. The present book far surpasses the volume of its precursors; it has been not merely revised and considerably enlarged, but to a large extent has been practically re-written, and has been brought up to the standard of present-day knowledge and needs in the light of ripe experience. The illustrations have been added to and made more clear. A full index and detailed table of contents increase its usefulness as one of the most encyclopædic books of reference, of moderate compass, serviceable alike to the parent, the schoolmaster, and the school doctor. Dr. Clement Dukes has the courage of his opinions, and the individuality of his teaching enforces the interest and weight which it commands. It may seem almost hypercritical to regret the repetition of a previous uncompromising recommendation of "Warm woollen socks—never cotton . . ." These are comfortable enough when first put on dry; but, enclosed in the impervious leather of the boot or shoe, they are prone to become a sort of sweat poultice—especially in individuals with naturally moist feet due to defective circulation—adding to this discomfort, tending to impair health, and to favour the development of the chilblains for curing which they are still often advised.

Lessons on Living. By H. Rowland Wakefield. 240 pp. (Blackie.) 1s. 6d.—This represents Nos. vi.-viii. of Messrs. Blackie's Science Readers, and comprises a series of informal lessons in the elements of human physiology and hygiene, cast in the narrative form. The illustrations are clear and good; there is a table of contents, a summary of the main points inculcated in the general lessons, and a few pages explanatory of the more difficult words and phrases used in the text. It is likely to be a useful book if expounded with knowledge, but, like many another of its class, it illustrates the dangers of concentrated dogma in detail. Is it certain that "consumption is sure to follow" the constant respiration of air already vitiated by breathing? or that "sewer gas causes . . . diphtheria?" Nor is it true that "drinking cold water before and during a meal" causes indigestion—if water be taken in sips, as it should

be—but rather the reverse. Again, "Intense study or exercise immediately before is as harmful as immediately after meals." Something might have been said about the care of the teeth, and about spitting. And, in the next edition, we may hope that there will be no recommendation of the dangerous charcoal fire.

The Study of Chemical Composition.—By Ida Freund. xvi. + 650 pp. (Cambridge University Press.) 18s. net.—Miss Freund traces separately the historical development in the discovery and in the establishment of certain laws and classes of phenomena in chemistry. The matter dealt with is associated in each case with the name of a renowned worker in the particular field; it is illustrated in the case of quantitative researches by the reproduction of the values obtained in the actual measurements made and contains frequent quotations from the classical memoirs on the subjects as well as copious references to the original papers. Although somewhat outside the scope of the reading of the ordinary student, the work should prove of the greatest value to teachers interested in the history of their subject, more especially as it will enable them to gauge more readily the relative bearing and importance of the classical researches which are now rendered so easily accessible through the Alembic Club Reprints, Ostwald's "Klassiker der Naturwissenschaften" and like works. The lengthy chapter of 170 pages devoted to the connection between crystalline form and chemical composition is very copiously illustrated by drawings of crystal models; that dealing with isomerism, a subject engaging so much attention from chemists at the present time, presents a somewhat difficult subject very clearly, though it might with advantage have been brought more up to date.

Principles of Physiological Psychology. By Wilhelm Wundt. Translated by E. B. Titchener. Vol. I. xvi. + 347 pp. (Swa Sonnenschein.) 12s.—The first edition of Prof. Wundt's great work appeared in 1874. It revealed the existence of a new department of scientific study on an experimental basis with a cautiously-expressed superstructure of theory. The fifth edition appeared in 1902, and it is scarcely too much to say that its broader basis and richer superstructure is in very large measure due to the influence, direct or indirect, of Prof. Wundt himself and his Leipzig school. There are few who are in close touch with the subject who do not look up to Wundt as their spiritual father. The translation of the work could not have fallen into better hands than those of Prof. Titchener. He tells us in his preface that so long ago as 1890 he carried with him to Leipzig a completed translation of the edition of 1887. The fourth German edition was, however, in preparation. When the translation of this was nearly ready the fifth German edition was in prospect. And of this we now have the substance of the Introduction and the First Part admirably done into English by one who is a master in the subject. The introduction sets forth the nature of the problems with which physiological psychology has to deal, gives a brief and lucid survey of the subject, and discusses the pre-psychological concepts involved. The translator has done well to incorporate this section (from the fourth German edition) in the volume. It is too good to be omitted from the English work. The First Part, which forms the main bulk of the volume, opens with the organic evolution of mental function, and discusses at the outset the criteria of mind and the range of mental life. There is no better account of the bodily substrate of the mental life than is to be found in the pages which follow.

Notes and Questions in Physics. By J. S. Shearer. 281 pp. (Macmillan.) 7s. 6d. net.—The present volume has been written to take the place of a similar book prepared several

years ago by Prof. C. P. Matthews and the author. It contains nearly 1,500 questions on graphic methods, averages, and approximations, and the several branches of physics. Mathematical tables are inserted at the end of the volume. Students will find that the full solutions in the text of numerous typical examples adds considerably to the utility of the volume; but it is unfortunate that the author decided to omit answers to the problems. The prominence given to force diagrams and graphic methods is particularly commendable, and in all sections the student of experimental physics will find many useful suggestions.

Messrs. J. J. Griffin and Sons, Ltd. (20-26, Sardinia Street, Lincoln's Inn Fields, W.C.) have recently issued the ninth edition of Part II. of their *Catalogue of Scientific Apparatus*. It forms a well-illustrated and complete price-list of appliances required in the subjects of sound, light, and heat. Several items of recent introduction here make their first appearance in a trade catalogue, and we are glad to note that obsolete appliances are almost entirely omitted. But we must take exception to the apparatus, consisting of a piece of lead tubing with glass tube attached, for determining the expansion of water between 0° and 10° C.; this, we believe, was described originally in an important text-book and has re-appeared subsequently in other publications; a trial of the experiment will suggest that the method was designed in the study and not in the laboratory, and that the disturbing effect due to the expansion of the lead was quite overlooked. The catalogue includes a useful collection of physical and mathematical tables.

What do we know concerning Electricity? By A. Zimmern. 137 pp. (Methuen.) 1s. 6d. net.—The author has endeavoured in this small volume to give a clear account of what is known concerning the laws and principles of electricity, without entering into details about apparatus, calculations, and practical applications. Short chapters are allotted to frictional electricity, chemistry and electricity, magnetism and electricity; induction currents, heat and electricity, electric waves, the passage of electricity through gases, and radio-activity. The volume is totally devoid of illustrations and sub-headings, and therefore is unsuited to the requirements of serious students of the subject; but it will provide the general reader with a simple and accurate account of fundamental principles.

Electromagnetic Theory of Light (Part I.). By C. E. Curry. 400 pp. (Macmillan.) 12s. net.—The phenomena of light are here regarded as electromagnetic, and the mathematical expressions are derived from the fundamental differential equations for electromagnetic disturbances. Part I. is restricted to the more familiar phenomena which can be explained by Maxwell's theory, and Part II. is reserved for those in which his theory fails to offer a satisfactory explanation. The volume under notice will only appeal to those readers who are thoroughly conversant with the more advanced branches of mathematics.

Monarch, the Big Bear of Tallac. By Ernest Thompson Seton. 214 pp. (Constable.) 5s. net.—Mr. Seton's position as naturalist to the Government of Manitoba has given him unrivalled opportunities for collecting materials for animal biography, and the appearance of another of his sympathetic studies will be welcomed by all who know anything of his previous work. Though it seems to us less carefully finished, the present story is marked by the same vividness of portrayal of a wild animal's individuality and development of character, the same power of holding the interest until the inevitable tragedy is reached, which so charmed the readers of "Wild Animals I have Known" and "Lives of the Hunted." As before,

Mr. Seton has drawn his own illustrations, which are full of vigour and humour.

Natural History in Zoological Gardens. By Frank B. Beddard. x. + 310 pp. (Constable.) 6s. net.—Mr. Beddard's eminence as a zoologist and his unique opportunities for studying animals which we in this country know only as "guests," are sufficient guarantee of the value of this book to serious students of natural history. As might have been expected, his treatment of the 117 kinds of animals—"the great majority of which are certain to be represented in most zoological gardens"—displays at once an intimate knowledge of details and a philosophic breadth of view which are in the highest degree educational. But his style is so pleasant—the pill is for the most part so cunningly surrounded by jam—that the book may be read with enjoyment by those who care nothing for the deeper questions of zoology. The animals considered are all vertebrates—chiefly mammals and birds, with a few reptiles and amphibians. The book contains forty-eight delightful and valuable illustrations from photographs by Gambier Bolton and drawings by Winifred Austen.

Handbook to the Vivaria and Freshwater Aquaria in the Stepney Nature-study Museum. 64 pp. One penny.—The practice of exhibiting in museums of natural history living specimens of such animals as can be comfortably kept in aquaria and terraria is fortunately a growing one; it is another welcome sign of the increasing interest in "live" natural history. For one museum visitor who will pore over a case of mounted insects a dozen will crowd round an aquarium or an "observation" beehive. This little handbook contains short and simple descriptions of seventy-one animals which in their due season are exhibited alive in the Stepney Nature-study Museum. At the end are given an outline scheme of classification and a list of standard books in which further information can be found. It is exactly what is required by the visitor, and may also be recommended to the notice of curators and teachers.

Practical Exercises in Chemical Physiology and Histology. By H. B. Lacey and C. A. Pannett. 112 pp. (Cambridge: Heffer.) 2s. net.—A book of moderate size and price, giving detailed instructions for practical work in the elements of physiological chemistry, was needed; and the first half of the present volume meets the want. The second part, on practical histology, is also well done. The exercises are judiciously selected and the descriptions clear. As a laboratory guide the book may be recommended.

The Western Wonderland. By H. W. Fairbanks. vi + 302 pp. (Heath.)—The sub-title, "Half Hours in the Western United States," sufficiently indicates the scope of the book. The author has evidently an intimate knowledge of his subject, and writes pleasantly and naturally of the scenery, industries, and natural history of a region unusually rich in interest. The book is well illustrated by 135 reproductions of photographs and by maps. It deserves, but does not possess, an index.

Philips' Nature Calendar for 1905. Twelve monthly sheets. (Philips.) 6d.—The front of each sheet contains a list of the principal nature "events" of the month, which will be found useful for reference. The back of the sheet is devoted to advertisements.

Mathematics

Practical Arithmetic. By A. Consterdine and S. O. Andrew. In one volume; Book I., 138 pp.; Book II., 96 pp. (Murray.) 2s., or with answers, 2s. 6d.—The complete title is "Practical

Arithmetic, an Introduction to Elementary Mathematics for Scholars between the ages of 9 and 12," and the book "is intended for scholars who have learnt the four rules in money." The range of the book goes far beyond that usually suggested by the name of arithmetic, and really includes a fairly complete elementary course in arithmetic, algebra, geometrical drawing, and mensuration. The special method adopted and consistently carried out is, that the materials used for calculations shall be largely obtained by the pupil himself from measurements that he has made; and the authors give definite suggestions in regard to the apparatus required. It is quite clear that an intelligent teacher can procure sufficient materials at comparatively small cost, and that, at any rate for certain types of scholars, the course laid down should prove to be both interesting and instructive. If the method prove, as we sincerely hope it may, to be practically workable in large elementary schools, it should develop in the pupils a readiness and self reliance that are too often absent in present conditions.

The Elements of the Differential and Integral Calculus. By Donald Francis Campbell. x. + 364 pp. (Macmillan.) 7s. 6d. —This book, which deals mainly with functions of a single variable, has been written with full knowledge of the difficulties of beginners and presents the subject in an exceedingly clear and simple way. The effort to obtain simplicity has resulted in a somewhat excessive multiplication of chapters; though long chapters are perhaps disheartening for beginners, there is a danger of forgetting proportions in an excessive sub-division. The first fourteen chapters deal with differentiation and contain simple geometrical and kinematical applications; Taylor's theorem is established, but the theory of infinite series is not considered, though at a later stage a few examples of integration by means of series are given. In chapters XV.-XXIX. integration is treated in great detail, the usual geometrical applications being discussed both by simple and by double integration. In chapter XXIX. on Approximate Integration the elliptic integrals of the first and second kind are briefly discussed, and short tables of their values are inserted. The concluding chapters, XXX.-XXXVII., are devoted to mechanical applications, and contain several interesting examples of an elementary kind; in these chapters the exercises seem to us to be more varied and interesting than in the more purely mathematical parts of the book. As an introduction to the calculus of a very simple and yet, within its limits, logically satisfactory character, this work can be thoroughly recommended.

An Introduction to the Modern Theory of Equations. By Florian Cajori. ix. + 239 pp. (Macmillan.) 7s. 6d. net.—There is a scarcity in English mathematical literature of elementary books on the theory of equations that take account of the Galois theory. In its elements that theory is far from difficult, and, as the greater part of recent researches on the theory of equations depends upon the fruitful ideas introduced by Galois, it is important that even elementary text-books should not ignore these later developments. In this "Introduction" the reader will find a succinct but clear exposition of the older treatment, including a simple proof (that given by Gauss in 1849) of the fundamental theorem on the existence of a sort of an algebraic equation; but the special value of the book lies in the presentation of the Galois theory. The exposition is on the whole very satisfactory, though the footnote on pp. 124, 125, may possibly cause difficulty; a distinct advantage over many of the continental text-books is the number of exercises which should effectually dispel the vagueness that the theory is apt to present to the beginner. Probably the author has been influenced by Weber more than by any other writer; he could not have selected a better guide.

Lessons in Experimental and Practical Geometry. By H. S. Hall and F. H. Stevens. viii. + 94 + iii. pp. (Macmillan.) 1s. 6d.—These "Lessons" are, in our judgment, suited in every respect for beginners. They are well graded, clearly explained and illustrated, and fairly comprehensive. We can cordially recommend them as an excellent introduction to the study of geometry.

The Elements of Geometry, Theoretical and Practical. By Braithwaite Arnett. Book I., ix. + 195 pp. Book II., vii. + 238 pp. Book III., vii. + 242 pp. (Simpkin, Marshall). 2s. each.—According to the preface, this work has been written for the use of candidates who are being prepared by a master for the different examinations conducted by the Universities and the Civil Service Commission. Book I. contains the substance of Euclid I., 1-34; Book II. treats of the circle, ratio and proportion, while Book III. treats of similar figures and areas. To obtain the best results from the use of the book the pupil should, we think, have a preliminary course in geometrical drawing and measurement; but, given such a course, the book has much to recommend it. The development is satisfactory on the theoretical side, and there is considerable originality in the carrying out of the proofs. Though the summary in the preface gives a rough idea of the contents, the matter included in the three volumes goes in many respects outside Euclid's range and introduces the pupil to several of the developments of modern geometry. In the course of the work there are several applications of the so-called practical kind; but, though these are excellent so far as they go, they do not constitute the chief claims of the book to the consideration of teachers. These claims rather lie in the theoretical development, at times perhaps too detailed, and in the large number of excellently selected exercises.

Elementary Plane Geometry. By V. M. Turnbull. 136 pp. (Blackie.) 2s.—The readers of this book are supposed to have had a course of experimental work involving measurement and numerical calculation, and to be ready for a training in deductive geometry. The range of the book is that of Euclid, Books I.-VI., and the number and order of the theorems have been mainly determined by the report of the Cambridge Syndicate in 1903. Several of the proofs are different from any in common use, and they are all very succinct. At times there seems to be a lack of precision; thus the definition of similar figures on p. 111 can hardly be considered satisfactory. The exercises are rather meagre, and should be greatly increased in number and variety. The set at the end of the book is fairly good, but there are not enough examples in the body of the text.

Elementary Practical Mathematics. By the Author of "Commercial Arithmetic," &c. viii. + 231 pp. (Oliver and Boyd.) 1s. 6d.—This book is designed to meet the needs of students, such as the members of continuation classes, who require a knowledge of elementary mathematics for technical purposes, and the contents include arithmetic, algebra, and a fairly wide scheme of mensuration. In the arithmetical sections some attention is paid to abbreviated methods. In view of the great practical difficulty of persuading pupils who have once learned the longer methods to adopt the others, it might have been well to insist even more strongly on their advantage in practice. We think the book should be found really useful for the particular class of students whom the author has in view.

Logarithmic and Trigonometric Tables. By John Dale. ix. + 37 pp. (Edward Arnold.) 2s. net.—These are five-figure tables, and seem to be extracted from the collection

noticed in *THE SCHOOL WORLD*, VI., p. 120. They include tables of common logarithms and antilogarithms, natural sines and cosines, natural tangents and cotangents, natural secants and cosecants, as well as the logarithms of these trigonometric functions; a table of radians and a list of numbers often used in calculations are also given. For work in which a somewhat greater accuracy than that given by four-figure tables is required this collection will be very convenient.

Arithmetical Examples. Edited by J. Logan. 83 pp. (Sonnenschein.) 1s.—These examples are said to be "elementary, intermediate and advanced, for the use of schools and colleges." They are drawn up in sixty sets of ten questions each, and, so far as can be judged without actual trial with pupils, seem to provide a sufficiently varied course of test papers in ordinary arithmetic.

Pendlebury's Arithmetical Scheme B Test Cards. Standards V. and VI. (Bell.) 1s. net each.—Each box contains thirty-six cards, with two copies of answers; the questions are adapted to the requirements of the syllabus, and will doubtless be useful to many teachers.

Easy Exercises in Arithmetic for Beginners. By W. S. Beard. xi. + 163 pp. (Methuen.) 1s. 3d.—These exercises seem to have been drawn up on very sensible lines, and contain ample material for any elementary course.

Miscellaneous.

Miscellaneous Essays and Addresses. By Henry Sidgwick. viii. + 374 pp. (Macmillan.) 10s. net.—"The dry light is best"; this old Greek saw comes into our minds as we read Prof. Sidgwick's essays. There is something more than dry about the spirit of them, something almost ascetic, a rare treat in these days of superlatives and gush. Mr. Benjamin Kidd has attained to a wide fame as a deep scientific thinker; Prof. Sidgwick turns the dry light of his reason upon Mr. Kidd with an austere smile, and Mr. Kidd's fallacies crumble away. An essay on the "Theory of a Classical Education" contains much sound sense. Several of these papers deal with politics, economics, sociology, and kindred topics, even socialism; but we like the others best. One on prize fellowships, written in 1876, is applicable still, although to a less degree; but the best essays are, we think, those on literary and religious subjects. These are: "Ecce Homo," "The Prophet of Culture," "A. H. Clough," "Shakespeare's Methods," "Shakespeare and the Romantic Drama." Perhaps that on Clough is most timely, in an age which has almost forgotten Clough, or at least relegates him to the class of authors talked of but not read. And with what kindly gentleness he rebukes the prig in Matthew Arnold, and puts in a plea for enthusiasm as against the tone of the "superior person." The plea is the more piquant for those who knew the exterior of Henry Sidgwick, who appeared to be one of the least enthusiastic of men. Or again, what can be more attractive than the examination of "Julius Cæsar" and "Coriolanus," showing what Shakespeare did to infuse the dry bones of his authorities with life? The analysis of Macbeth's character seems to us also peculiarly delicate and true. And all through these pages plays the lambent flame of a dry humour.

A History of Architecture on the Comparative Method, for the Student, Craftsman, and Amateur. By Prof. Banister Fletcher and Banister F. Fletcher. Fifth edition, revised and enlarged by Banister F. Fletcher. lii. + 738 pp. With about 2,000 illustrations. (London: Batsford.) 21s. net.—This is a won-

derful book. It covers the whole range of architecture, its history and development—Egyptian, Mycenaean, Greek, Roman, Byzantine, Norman, and Gothic; traces the relations of the various styles, compares them in principle and in detail, illustrates every point by carefully arranged plates, and gives a full bibliography. The book is quite up to date; it includes Mr. A. J. Evans's discoveries in Crete (although it makes the common mistake of supposing the building material to be stone, and not concrete, p. 54). Indian, Chinese, and Japanese architecture are also discussed, and space is given to the beautiful Saracenic "Gothic." Even Chicago, with its skyscrapers, is not forgotten; contrast the theatre opposite p. 601 with the Pantheon! We cannot do better than take one section, and indicate the author's treatment. English Gothic occupies pp. 278-357. It begins by discussing the influences: geographical, geological, climate, religion, social and political, historical. Next comes architectural characters, Gothic vaulting, Norman, early English, decorated, perpendicular, open timber roofs in the Middle Ages. Examples: cathedrals, monasteries, parish churches, castles, dwellings, chapels, colleges and schools, bridges, hospitals, ancient timber houses. The fourth part is comparative, the different periods being treated under the heads of Plans, Walls, Openings, Roofs, Columns, Mouldings, Ornaments. Each portion is illustrated with plates—e.g., comparative diagrams of vaults and domes, examples showing progress of Gothic vaulting, types of open timber roofs, comparative views of models of English cathedrals (twenty-two in three plates), comparative plans of the same, and others. It is difficult to describe how vividly instructive these comparative plates are. Those which the authors have drawn are wonderful for the amount of matter compressed into a small space. All the other parts of the book are treated in the same way. The accuracy of the second is remarkable (we have noted a few misprints: *Athens* for *Atrous*, p. xvii., *Æniades* for *Æniada*, p. 54, and on p. 67 one would infer that Aphasia was another name for "Jupiter Panhellenius"). It is attractive to read, in spite of its compression. It is difficult to speak too highly of this book; it is well worth the cost.

The Educational Theory of Immanuel Kant. Translated by Dr. E. F. Buchner. 291 pp. (Lippincott.) 6s.—It is a distressing thing to come across a masterpiece which has all the look of a broken statue badly put together. The fragments of Greek dramatists, the angularities of the Nicanachean Ethics, and even the intentional irrelevances of Levana, are so tantalising to the student who continually asks himself, "What would all this have been had it been properly finished?" It is so with the wise sayings contained in Kant's brief lecture-notes on pedagogy. We all recognise the suggestiveness, the nobility, the common sense of the great philosopher's *obiter dicta*; but they are *obiter dicta*, none the less. Dr. Buchner has done a service in putting this wise book into students' hands; for even though it serve no other purpose than a pedagogic calendar, it teems with thoughts that make the teacher think "an outline of a theory of education is a noble ideal, and does no harm even if we are not in a position to realise it immediately." "He who has been educated correctly trains others in a like manner." "Children should be educated according to the idea of humanity and its entire destiny." "The plan of an educational scheme should be made cosmopolitan." "It is true that adults do not ride a stick, but they none the less ride other hobby horses." "In our times it is rightly assumed that the boy of sixteen must be talked to openly, plainly and positively." "In spite of its varieties there is, after all, everywhere unity in religion." Probably little value has been set on Kant's pedagogic lectures; he is not referred to at any length in the much-read Quick, and his successor, Herbart, holds sway everywhere. Perhaps Dr.

Buchner's admirable introduction will make some people dig in this mine of jewels.

Enseignement et Démocratie. 340 pp. (Paris : Felix Alcan.)—This is a collection of lectures on educational subjects, mainly considered from a national point of view. Each lecture is by a well known teacher or professor. The general impression left by the conclusion is that of great sanity. Latin is not more important than Greek, nor is Greek more important than German. "*Lire des textes, on l'a dit cent fois, c'est causer avec les grands écrivains.*" "The utilitarian theory has no solidity. It is a shadow which disappears as one advances on it." One would expect this from the Celtic spirit, so business-like, so idealistic; but we are reminded in reading these lectures that our difficulties are theirs. Behind all the schools, of whatever nationality they be, there is the national tendency. Herein lies the schoolmaster's difficulty. What compromise can we make with a movement of a Western world in which we schoolmasters are less important than we think?

The Logic of Human Character. By C. J. Whitby. 1 + 205 pp. (Macmillan.) 3s. 6d. net.—The results of the new psychology are slowly coming into the hands of the every-day reader. Dr. Whitby frankly admits in his preface that the "correlation of physical structure and psychical function is an assumption underlying the whole of this essay." The book contains seven chapters and a conclusion. Character is dealt with under categories—immediate, formal, real, substantial, transcendent, absolute, and in every chapter the divisions of character are dealt with under three heads: aesthetic, intellectual, practical. Feelings, thoughts, actions, are "the triple strands whereof the intricate living web of character is woven on the shuttle of existence." It is possible that here and there the terminology may frighten the reader, but it is not possible that any one can read this book without wishing to make a short list of the fine things said. The hopefulness of a writer who sees in every human being, normally born, all possibilities; who insists that no life falls to the ground, unimportant; and that the teacher's office, though the "moulding" of character is impossible, is of so high and fine a kind; this hopefulness makes the book almost unique. If this is going to be the teaching of the new psychology, then we may find, from an unlikely quarter, a twentieth-century reading of the New Testament which will startle the schools.

Phillips' "Simplex" Attendance Chart, 17½ × 22 inches, (Phillip), 1s. 6d., which has been sent to us, shows at a glance the average attendance at a school each week, and by using a different coloured ink the same chart may serve for two or three years. The attendance is shown by rises of half-percentages from seventy-two to one hundred, and it is most admirably adapted for illustrating the value of curves as graphic illustrations of varying conditions. The chart is mounted on millboard, and printed and coloured in such a manner that it is an ornament to a school wall.

The Acts of the Apostles. By Rev. A. E. Hilliard. 177 pp. (Rivingtons.) 2s.—Good things come to an end; and this volume concludes a series which makes one regret that these same "Books of the Bible" are to be treated in the uniformly scholarly and painstaking way which has marked almost all the previous editions. This edition is largely based upon Hastings' celebrated "Dictionary," so that those who use it may know at once what line will be taken by Mr. Hilliard. The introduction is admirable in its sober style and comprehensive but yet condensed range of learning. The sections which deal with the history of the Jews in the period lying between A.D. 29-66 is extremely

terse in style but equally valuable and full of matter, and the note on Herod's Temple is worth attention. The notes proper are on the same high level hitherto maintained; but by way of an appendix there is a very valuable "Note" on the traditions with regard to the Apostles and other personages of the Acts, and a handy little summary of passages from the Old Testament used in this book. Altogether highly praiseworthy; concluding a really notable and widely used series with much distinction.

Old Testament History. By Rev. O. R. Barnicott. 157 pp. (Dent.) 1s.—A sensible little book, which ought to be used widely in school work where junior forms are concerned; for it is likely to promote that view of things biblical which, if it be imbibed sufficiently early, will not need to be corrected later by a process of criticism which so often passes into blind unbelief. Hence the author, before embarking upon his main enterprise, offers half-a-dozen suggestions to teachers which ought to make the work of teaching Scripture considerably less troublesome to those who are given to unorthodox views; although it may be doubted whether those of the contrary way of thinking will accept them on any terms. They are, however, extremely judicious, and deserve consideration. The narrative is well managed, when Dr. Barnicott gets to it; it is plain and simply told. The appendix contains a number of examination questions and some useful tables, one a pronouncing vocabulary which might well have been lengthened.

We have received from Mr. Arthur Englefield, headmaster of the Gloucester Municipal School of Art, a very ingenious table-rest or drawing-book frame. It consists of a stout oblong frame, large enough to hold an ordinary drawing book, which is grooved on two sides in such a way that a wooden bracket, heavy enough to form an adequate support, can be made to slide along either the long or short side, so that the frame can be used at almost any angle, at a slope no greater than that of an ordinary school-desk or nearly as upright as an easel, and with its long sides either horizontal or inclined upwards. The back, which keeps the drawing book in place, is furnished with a ledge to hold a copy or a book, so that the contrivance acts as a book rest. Private students, and pupils in schools where sloping desks are not used, very often sit, when drawing, in positions which make good work impossible and are positively harmful from hygienic points of view. Mr. Englefield's invention—which he calls the "Book-Incline"—should be a great help towards teaching children to sit correctly when drawing and reading, and should also prove of assistance to those who are much engaged in copying. It is simple in construction; it has no mechanical contrivances to get out of order; and it is well made, while its price (3s.) brings it within the reach of most people.

Farthest North. By Dr. Fridtjof Nansen. With an Appendix by Otto Sverdrup. 679 pp. Illustrated. (Constable.) 6s.—We welcome this cheap edition of Nansen's inspiring narrative with sincere pleasure, because it will enable many to possess a book which contains one of the most interesting records of exploration ever published. The voyage of the *Fram* in 1893-96, and the fifteen months' sleigh journey by Dr. Nansen and Lieutenant Johansen, are familiar facts throughout the civilised world; but only those who have read this account of the expedition can realise how full it is of stirring incident and noble thought. To say that the book should be in every school library does not express its worth with sufficient insistence. We would prefer to remark that, considering the low price at which the work is now issued, the school in which the volume is not made available is in a very parlous state.

The New York Public School. By A. Emerson Palmer. 1-440 pp. (Macmillan.) 4s. 6d. net.—This is a handsome volume which owes itself to the celebration of the centenary of the inauguration of the movement for free public schools in New York city, and all statistics that could be got together have surely been pressed into its service. But it is a business volume: the first forty years are disposed of in less than a hundred pages, and the book makes no claim to be literary. All the interest that is felt in reading Lyte's "Eton" or the history of S. Paul's is absent: we hear everything about cost of education, petitions regarding education, presidents of the Board of Education; but nothing of the boy and girl, nothing of the life of the school, nor of the influence of the teacher. We could well spare the many illustrations (all excellent) for half-a-dozen living, breathing records (which must exist), showing us how the schools were carried on. In Chapter XI. we are even treated to a biography, not of celebrated children but of ministers of education, and only in one appendix does the real inner history of any school shine forth; even here we are deprived of the spelling of the original document. But if any one requires to know the business history of the New York school, this admirable and full record must be consulted. Nowhere can a bird's-eye view of the various educational centres be so readily obtained. An interesting chapter in Joseph Lancaster's history is found in this volume.

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 Heuristic Method of Teaching Science.

AFTER re-reading the instructive series of letters on this subject which are published in Volume II. of THE SCHOOL WORLD for 1900, I am encouraged to raise a kindred question, in the hope that an equally illuminative discussion may ensue. So far as I am able to ascertain, it is claimed by the exponents of the "research" method of teaching science that pupils trained on this plan develop to a noteworthy degree a character remarkable for initiative, resource, and originality. We are told that pupils educated on heuristic lines are never nonplussed when called upon to apply the results of their own experiments to problems more or less related to those already worked out by them in the laboratory. The success of these pupils in the circumstances described is, we are assured, much greater than that of boys and girls taught in the old way.

In my capacity of examiner in elementary science for various public bodies, I have recently experimented with a view to determine if claims made by the advocates of the "find out for yourself" method are just and can be substantiated. The results have not been altogether satisfactory. I gratefully acknowledge the fact that questions confined strictly to the precise "researches" carried out by these pupils have brought me intelligent and well-reasoned accounts of the experiments conducted under the immediate guidance of the teacher, and that the descriptions have been expressed in clear, intelligible English.

On the other hand, questions specifically designed to determine how far such pupils are able to apply the method, they have practised to strictly analogous problems, and to suggest plans for solving difficulties of a simple, related kind, have received brief answers couched in terms such as "We have not done this experiment"; "in our experiment we dealt with so and so, and in that case we did so and so." In

addition to this, I have found repeatedly that facts of the simplest kind, that any boy who has been through a course of work in elementary science might be expected to know, have not been assimilated by pupils brought up under a "research" régime.

It would be of great value to me, and to others similarly situated, if we could ascertain the point of view of teachers, and determine what their aim is exactly and what results they think examiners have a right to expect. Definite answers to one or two questions would prove of great service to us. Is it right to suppose that pupils who have studied elementary science for two or three years will know simple fundamental scientific principles and be acquainted with elementary basal facts? Or, are examiners merely to expect that pupils are able to reproduce accounts of a series of experiments carried out under the immediate guidance of teachers, and are incapable of applying the method of their work to related problems? How much reading of standard works of science, too, is to accompany what I am disposed to call "personally conducted trips" into the field of scientific research?

If a discussion of the kind I have in mind could be raised, it would prove of the highest value to teachers and to examiners.

EXAMINER

Individual Attention.

WHAT is meant by "individual attention?" It seems to be in direct contradiction to the idea of a school, which is based on class-teaching. It is often forgotten, apparently, that a school is a co-operative concern, of which the pupils are the members; they pay in so much a head, in order that, by thus clubbing together, they may secure a share in certain things with which they could not separately provide themselves. Thus the pupils are in exactly the same relation to one another as (say) visitors at an hotel who do not take private sitting-rooms, or the passengers in a train or a tram, &c. The business of the management is to provide, as liberally as it can, for the objects towards which the visitors or passengers have subscribed, and to take care that all advantages are equally open to all subscribers, though it is certain that some will make greater use of them than others. A school would seem to attain this object when in every school-hour appropriate class-teaching is offered to every pupil. If some fail to take their share of the benefit, does that give them a claim to have special extra facilities provided for them—at the cost of the other subscribers?

What this cost is often escapes observation, but, when examined, it will be found to be considerable. Thus, if class teaching is fully provided, and the staff fully occupied, (a) the staff might be increased; if that is out of the question, then (b) some of the class-teaching might be abandoned, and the time devoted to individual attention. Assume that this is done with a class of twenty-five; for each class-lesson of fifty minutes so sacrificed each pupil gains two minutes of individual attention. But what is really asked for is that the whole fifty minutes shall be concentrated on the two or three boys at the bottom—the "professional unemployed"—of the form; for their sake the other twenty-two or -three boys absolutely lose a fifty-minute lesson which they were entitled to receive. If they—or rather their parents—came forward and voluntarily offered to make this sacrifice it would be different; but who has a right to impose it upon them? It is, indeed, imposed not seldom, and openly advertised as well, and pays, because parents do not perceive what it implies, viz., that every boy of average industry is a loser by it, and is—to put it plainly—defrauded of what is due to him as a subscriber to the concern. In fact, if there is individual attention at one end of the scale, there ought, in common fairness, to be the same at the other end. The indus-

trious should be provided with special preparation for scholarship or other examinations.

Finally, it may be doubted whether individual attention is really beneficial to those for whom it is asked. The reason why they need it is almost always that they are inattentive and idle, and won't take advantage of class-teaching. Will this defect of theirs be diminished—will it not rather be increased and confirmed—when they see that means are devised whereby the natural consequences of their ill-doing are to be fended off—at other people's expense?

ROBERT L. LEIGHTON.

The Grammar School,
Bristol.

The Education of Intending Pupil Teachers.

To anyone like myself who has been long identified with the training of pupil teachers there are naturally several points in Mr. MacCarthy's paper which suggest comment.

Accepting his own gauge of "sneaking" as a test of tone, I should like to say that my own experience as scholar, pupil teacher, assistant master, and headmaster in elementary schools of the ordinary type does not at all support Mr. MacCarthy's contention that the average elementary schoolboy is prepared without pressure to give away his comrades. And, even if the case were as bad as Mr. MacCarthy suggests, it would, as he himself admits, by no means indicate that the teachers sympathised with this attitude and did not endeavour to correct it. According to my experience in pupil-teacher centres and training colleges, which are largely responsible for the training and moral formation of the future teacher, the accepted mode of dealing with serious offenders is for those who are cognisant of the offence privately to warn him (or her) and probably to repeat the warning; if the offender is recalcitrant he is reported to the headmaster or principal. With all due deference to the traditions of endowed schools, I submit that this is a better and juster way of dealing with an offender than is the alleged practice in the elementary school or the accepted method of the endowed secondary schools. Mr. MacCarthy's statements help me to understand what I once heard with much surprise from a Cambridge honours' man, viz., that no stigma whatever attaches to the man who can successfully "copy" in a pass-paper, but that "copying" in a scholarship or competitive examination is a dire offence against undergraduate ethics. You must not offend against the individual, but if you dissipate the offence by spreading it over the community it entirely vanishes! The gentlemen who are occasionally condemned for embezzling public funds might have imbibed their morals in this school!

If pupils prepare in the endowed schools for work in the elementary schools, I hope they will acquire sufficient moral stamina not to acquiesce in admitted evil, and will not out of a false sense of honour screen the cheat, the bully, and the corrupter.

It is always one's duty to stand by comrades and to assist the weak and erring, but duty occasionally demands that one shall take the scoundrel by the throat and either bring him to his moral senses or procure his expulsion from the society which he is contaminating. As a nation we are very conservative and far too much influenced by the conventions and practices of the classes and institutions which are supposed to be above us. We shall never make the progress we might, so long as we unthinkingly accept debasing standards and questionable practices because they are current among those who are conventionally superior. We should be willing to learn from all quarters.

As regards the general question of pupil-teacher training, I for one welcome experiments of various kinds and in schools

and colleges of various grades; let there be an open field. The one essential I would lay down is that the institution which has charge of the pupil teacher, either in the preliminary or the subsequent stage, should have him long enough to be fairly responsible for his training; a four years' course is not too long, and I should certainly put down three in one institution as an irreducible minimum for effective influence.

G. A. CHRISTIAN,
Principal, Battersea P. T. School.

The Value of Drawing.

As a teacher of drawing, may I emphasise by a few words the finding of the Berne Congress with regard to this matter, as reported in your issue for November last. "That drawing should be to the child a means of impression and expression of its own thought, and therefore have a place throughout the whole school curriculum." Now, this is not the case in a large number of schools, and I have often thought it is because educationists as a whole fail to realise how valuable an auxiliary the child's powers of drawing might be in advancing one of the great aims of education, *i.e.*, the awakening of the associative faculty to the natural relation of one subject to another, and, as a consequence, too little encouragement is given to the children's illustrative abilities.

The Royal Drawing Society has taught us that picture making is the child's own art, and experience has shown us that nothing is more enlightening as to the workings of the child's mind and the impression we, as teachers, have made thereon. All teachers know how valuable this self-revelation is, which is free from all suspicion of mere mechanical reproduction.

Again, the demand for more information which at once arises when a picture is to be made should be enough to convince us we are following the lines "of least resistance," and that we have found a means of suggesting correlation of study within the child's own sphere of activity. Backgrounds to battles, condition of houses, aspects of countries, modes of living, costumes, weapons; these, and other matters, are brought to the school studio for discussion by the eager little artists, and delightful sometimes is the original manner in which they are handled. This power of imagination, and, consequently, of visualisation, is common in childhood, and shows us how objective the child's outlook on life is (a fact not always reckoned with enough), and to cultivate this power is to preserve to all teachers the quality they most prize in their pupils.

I hope that the finding of the Berne Congress may not be overlooked, and that we may see an increasing demand for, and appreciation of, the pictorial means of expression so dear to childhood.

LETITICE A. MACMUNN.

1, Blomfield Terrace,
St. Leonards-on-Sea.

Transfer of Secondary Schools to Local Education Committees.

CAN any reader give me an idea of the general practice of the Board of Education in consenting to the transfer of a secondary school, working under a scheme of the Charity Commission, to a local Education Committee?

Is the scheme in the main adhered to, the governing body alone being altered, or does the Board of Education consent to the schools being handed over "body, soul, and spirit?"

S. J. G.

THE STUDY OF PEDAGOGICS BY CORRESPONDENCE.

The School World Club.

BOOK FOR STUDY.

Essays on Educational Reformers. By R. H. Quick. (Longmans, 1902.) 3s. 6d.

WEEKLY DIVISIONS OF THE BOOK.

Week	I. Chapters I.-III. (inclusive).	Week VIII. Chapters XIV. and XV.
"	II. Chapters IV. and V.	" IX., X., & XI. } Chapter XVI.
"	III. Chapters VI.-VIII. (inclusive).	" XII. Chapter XVII.
"	IV. & V. Chapters IX. and X.	" XIII. Chapters XVIII. and XIX.
"	VI. Chapter XI.	" XIV. Chapters XX. and XXI.
"	VII. Chapters XII. and XIII.	" XV. Chapter XXII. and Appendix.

Comments and Questions on the reading of Weeks XIV. and XV. to be sent to the Editors on or before May 18th.

SELECTED COMMENTS ON CHAPTERS XVII.-XIX. (INCLUSIVE.)

CHAPTER XVII. Section 4. "*The very first time that I found myself before thirty or forty boys I felt thoroughly at home . . . I was inexpressibly happy.*" Surely this experience of Froebel's has not often been matched! It seems to me unique and proof enough that Froebel was born a scholastic genius, though his biography shows that he took some years to discover the fact for himself. In the case of most schoolmasters—even schoolmasters eventually highly successful—I fancy the experience would read: "*The very first time that I found myself before thirty or forty boys I felt thoroughly at sea . . . I was highly apprehensive and inexpressibly miserable.*"—E. WYLMER JONES.

Section 24. *Froebel's insistence on the cultivation of the pupil's "self-activity."* As I have remarked in commenting upon the work of educational reformers, dealt with in earlier chapters of our book, a study of the history of educational effort reveals convincingly that all our modern reforms have been evolved slowly; they are not the sudden discoveries of modern educationists, but rather the inflorescences which are the natural results of the seeds planted—and often watered with tears—by scholastic pioneers. We ought, it seems to me, humbly to acknowledge our indebtedness, and while benefiting by the work of our forbears, strive to do our share of the planting for future generations.—T. ELLIS.

Section 30. "*All methods shall have a scientific foundation, i.e., they shall be based on the laws of the mind, or shall have been tested by those laws.*" Quick completes his summary of the requirements of the "new education," largely the outcome of Froebel's efforts, with this statement. Unless the need for a scientific treatment of educational problems is recognised there is little hope of progress. In contemplating the attitude of many public schoolmasters towards educational reform, I am irresistibly reminded of the nineteenth century conflict between science and religion. So long as the clergy failed to realise that science represents fact and truth, and that unless their teachings were in consonance with scientific realities there was little hope of their retaining the confidence of their followers, so long the conflict between religion and science raged. Similarly, unless public schoolmasters learn to relinquish their mediæval ideals and to realise that education to-day must be based upon scientific principles, they will soon be discredited universally.—R. FOWKES.

The Kindergarten. The idea of the kindergarten at first appears delightful, but in practice I consider it a failure—at any rate, less successful than ordinary preparatory school-work. In my own school I have always found children who have attended kindergarten classes previously the most restless I have come across, and it takes a few terms to teach them concentration even on the simplest kinds of work. I have concluded that organised play is good for a child in the nursery, but a mistake in any kind of school. A child should at the outset be made to distinguish between work and play, since one renders him more appreciative of the other, and until he is able to make the distinction he should not enter a schoolroom. That work should interest a pupil all true teachers will agree, but that all work should be interesting is impossible. There is monotony in the routine of daily labour throughout the whole of life, and it is a vital necessity in their after life that boys and girls should adapt themselves to a certain amount of drudgery in youth. American teachers came to the same conclusion long ago.—L. MARION JONES.

CHAPTER XVIII. Section 20. If Jacotot could follow the modern movement to place the teaching of the mother tongue upon a satisfactory basis, he would realise that his proposals had not been in vain. There is every prospect, I fancy, that the adoption of the plan popular with "reform" teachers of modern languages in the teaching of English itself will soon be the rule rather than the exception.—H. MOWATT.

CHAPTER XIX. Section 18. Quick's estimate of the value of Greek in the education of pupils in secondary schools is of peculiar interest just now. Certainly it looks as if the recent Cambridge vote is not final and that compulsory Greek in preliminary examinations will soon be a thing of the past.—J. T. GOUGH.

Spencer and the advocacy of scientific methods in education.—Quick, while recognising the importance of Spencer's book on education, seems to me a little unsympathetic towards it. This is the more surprising, because Quick is ready to point out how much Pestalozzi and Froebel gained by their study of science, and the adoption of its principles, in their educational inquiries. I think, however, that, if Quick could have witnessed the excellent results which have followed the introduction of experimental science-teaching into our schools, he would have been much more enthusiastic over Spencer's work.—H. ANDREWS.

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SIXPENCE.

MATHEMATICAL TABLES.

By Prof. GEORGE A. GIBSON, M.A., LL.D.

THE text-books of mathematics in common use during the first half of last century were frequently provided with more or less elaborate sets of tables, and, however deficient a pupil's training might be on the theoretical side, it usually included a prolonged course of calculation, in which these tables were systematically employed. Concurrently with the extension of our peculiar examination system, however, the practice of using mathematical tables fell into desuetude, and even though the theory of logarithmic calculations was usually expounded, the manner in which logarithms were applied in examination papers obscured their real value, while tables other than those of logarithms were absolutely banned. It is one of the most encouraging features of the recent changes in mathematical instruction that more attention is being paid to the arithmetical side of mathematics, and that consequently a demand is arising for suitable tables of mathematical functions.

It is sometimes objected that the use of mathematical tables in schools encourages purely mechanical methods of work, obscures the theoretical basis of the subjects treated and destroys expertness in performing the ordinary arithmetical operations. Doubtless it is possible to make a wrong use of tables; for example, by a too early recourse to them or by a too exclusive dependence upon them; but my own experience leads me to believe that, in the main, the objection is not well founded. When tables are available many results, which would otherwise be left in the vague garb of a surd or a functional symbol, are expressed in definite numerical form, with a consequent gain in clearness and precision on the part of the pupil. There is, besides, a marked increase of interest in the solution of problems when tables are available; in fact, the average school-boy loses a considerable part of the advantages of a mathematical course unless that course is kept in close connection with the concrete by means of numerical examples that can only be satisfactorily tackled when tedious arithmetical operations are lightened by the use of tables of frequently recurring functions.

Another consideration may be urged in the way of removing objections. Though it is not, of

course, essential that the pupil should be able to construct a table before he is allowed to use it, yet he can obtain a much clearer insight into the nature of a function by tabulating a short range of it, making the necessary calculations for himself. By a combination of calculations and graphs he can readily form, say, a table of square roots, and in the process he will acquire notions of the restrictions to which the principle of proportional parts is liable. In the use of tables there is no principle so extensively applied as that of proportional parts, yet, even among the best pupils, there is none that is so little understood; the excellent treatment that it frequently receives in text-books is generally ignored in actual teaching and the pupil often fails to apply the proper restrictions when consulting tables. In no field can the cumulative effect of rejected figures be so systematically traced as in the construction of tables, and both in their construction and in their use the principles underlying all approximate calculation find constant exemplification. Theory and practice can be admirably combined, and any effects prejudicial to the pupil can hardly be attributed to the introduction of tables, provided these are used intelligently.

In a brief discussion of the nature and extent of the tables that are suitable for school use it seems unnecessary even to refer to the numerous elaborate collections that are available for calculations in which a high degree of accuracy is desired. In what may be called the ordinary work of a laboratory the accuracy required in calculations rarely reaches $\frac{1}{10}$ th per cent. and is usually much less, while, with an exception to be afterwards noted, the problems of a practical kind that fall within the range of a school-boy do not demand a greater accuracy than about $\frac{1}{2}$ per cent. The use of tables that yield an accuracy greatly in excess of that warranted by the data of a problem can only foster incorrect notions of the nature of the result, and is therefore to be deprecated, quite independently of considerations of the time and labour involved in their use. Experience shows that it is very difficult to persuade the beginner that in many cases the retention of all the figures in a result gives a totally false estimate of the quantity under investigation, so that it is very desirable in making a choice of tables to select, so far as circumstances permit, those with the smallest number of figures

R

that will yield the desired accuracy. But the cost in time and labour entailed by using an excessive number of places of figures is in itself serious when the crowded condition of school time-tables is considered. Holman, in his "Computation Rules and Logarithms," p. vii., estimates that the work in calculations with four, five and six places of figures respectively may be represented by the ratios 2 : 3 : 4 ; if this estimate be accepted, and it seems fairly correct, it is obvious that the waste of time in using even five places when four places are sufficient is considerable, while the use of the common seven places is quite unjustifiable.

So far as the practical data that fall within the range of school work can be taken as decisive of the accuracy required in calculations, it seems reasonable to accept a standard of about $\frac{1}{2}$ per cent. We must, therefore, consider the question, what number of places must the tables have in order to secure this accuracy? The answer depends to a considerable extent upon the number and nature of the operations involved, but this is hardly the occasion for discussing it minutely. In the very interesting introduction to the tables above referred to, Holman gives an excellent elementary treatment of the more important details that have to be considered, and states the rule that, even when the number of operations is as large as twenty, an accuracy of 1 per cent. can be obtained by 4-place tables and an accuracy of $\frac{1}{10}$ th per cent. by 5-place tables. This rule is stated so as to guard against the maximum error with the given number of operations, and is certainly quite safe. I think, however, that it is too stringent, and that in all ordinary cases 4-place tables will yield an accuracy of $\frac{1}{2}$ per cent. ; when the number of operations is fairly small, as it usually is in elementary cases, the accuracy is still greater.

For the ordinary work of schools 4-place tables seem to me to be quite sufficient ; they give a reasonable degree of accuracy and they are exceedingly compact and easy to use. Five-place tables of logarithms are too bulky when they give directly the logarithms of 4-place numbers ; when they give directly the logarithms of 3-place numbers merely, the interpolations are somewhat tedious. I confess to having long cherished a preference for 5-place tables, but experience has convinced me that 4-place tables are quite sufficient for ordinary school purposes. As regards the logarithms of numbers, the least satisfactory part of the table is, of course, the beginning ; there is a certain advantage in a supplementary table giving directly to four places the logarithms of 4-place numbers.

In working with tables it has to be remembered that, while the tabulated numbers involve at most an error of half a unit in the fourth place, this error may by interpolation be increased to a whole unit. It has become usual in English 4-place tables to provide columns of "differences," so as to save the labour of calculating the proportional parts. The convenience of this arrangement is unquestionable, though the tabulation is perhaps carried further in some cases than is warranted by the constancy of the differences. The differences,

however, as given in nearly all the tables, seem to me to require revision ; at any rate, when preparing tables some time ago I came to the conclusion that several of the differences usually given caused an interpolation error of more than a unit in the fourth figure when that error could have been kept within the unit by a better choice. The only satisfactory method, so far as I was able to discover, for obtaining the best difference was that of actually testing it by comparison of the interpolated value with a table reading directly to more than four figures. The method is, no doubt, laborious, but in view of the general adoption of 4-place tables it seems very desirable that they should be made as perfect as possible.

There is, however, another point of view from which the subject of this article must be considered. For advanced pupils, and particularly for those who are likely to pursue mathematical studies beyond the school curriculum, it is, if not absolutely necessary, at least very desirable to have some practice in more extended calculations than can be undertaken with 4-place tables. The limitations demanded in the solution of practical problems do not, of course, apply to the calculations of purely mathematical functions, and it is almost a necessity that those pupils who aim at a study of the higher mathematics should become familiar even in their school-days with the use of larger tables and the manipulations required in dealing with large numbers. Success in these calculations depends very largely on the arrangement of the work, and even a moderate amount of practice will greatly strengthen the pupil's grasp of arithmetical processes and throw considerable light on the nature of mathematical functions. The fact that 6-place and 7-place tables can be readily obtained may be taken as a sufficient justification of their recommendation for such work.

The exceptional case referred to near the beginning of this article, in which 4-place tables do not furnish sufficient accuracy, is that in which problems on interest are involved. Even in books of 7-place logarithms a supplementary table is usually given in which the logarithms of R (the amount of £1 for one period) are extended to ten places, and in the large compound interest tables used in banks and counting houses the calculations are carried considerably beyond the range of a 4-place table. When the rate per cent. is not very small and the total period not very large, the smaller table gives fairly approximate results ; but when the subject of interest and annuities is treated with any degree of fulness, as might be done, for example, on the commercial side of a school, it seems necessary to employ 7-place tables in the calculations. Except in very special cases, it hardly seems desirable to introduce interest tables into schools ; short tables, such as could be inserted in a collection for schools, would be of no great service, and the necessities of the case would be sufficiently met by 7-place tables of logarithms.

Summing up what has been said, I think that for school use two sets of tables are required :—

I. Four-figure tables for ordinary purposes.

II. Six- or seven-figure tables for pupils who make a specialty of mathematics and for advanced work in interest and annuities.

We have now to consider the functions to be tabulated.

I.—FOUR-PLACE TABLES.

(1) *Squares, Square Roots, Cubes, Cube Roots, Reciprocals.*—These functions are of constant occurrence in mensuration, algebra and graphical work, and, as the method of using all tables is practically the same, the pupil may properly be introduced to the construction and use of tables by means of these elementary functions. There seems to be no valid reason why the table of roots should not be used as soon as the pupil has learned the ordinary method of extracting the root; that process is not in itself of any special value, and the tedium attaching to it is usually to blame for the unsatisfactory practice of leaving results, even in the case of practical problems, in surd or fractional form. The collection should certainly include 4-place tables of square roots; it is, however, not so clear that 4-place tables of cube roots should be given, though, on the whole, I favour their retention. In any case, a short table of cube roots should be given, both for the sake of problems in mensuration and for graphical work.

(2) *Logarithms and Antilogarithms.*—Logarithms of reciprocals do not seem to be necessary; it is both easy and instructive to read off the logarithms of the reciprocals from the table of the logarithms of the numbers.

(3) *Natural Sines, Cosines and Tangents, Radians.*—The interval of tabulation should be in each case $6'$ or 0.1 of a degree. The importance of the reciprocal functions, cosecant, secant and cotangent, is not great enough to warrant the increase in bulk of the book and consequent difficulty in finding the right table.

(4) *Logarithmic Sines, Cosines and Tangents.*—These tables are, of course, not very accurate near the ends, but it hardly seems desirable to print supplementary tables, though these would in some kinds of work be of distinct service.

(5) *Natural Logarithms, e^x and e^{-x} .*—These functions would find their main application in graphical work; a short table of the exponential functions would, however, be probably sufficient for such purposes.

(6) *A table of frequently occurring numbers.*

The following collections may be named, but it is not possible to indicate more than a very small number.

(1) Bottomley's "Four-figure Mathematical Tables" (Macmillan). These contain several tables not named in our list and do not contain the Cubes and Cube Roots.

(2) Clark's "Mathematical and Physical Tables" (Oliver and Boyd). This is a very cheap and handy collection, but has no table of Radians, while the first set in our list is comprised on one page.

(3) Dale's "Five-figure Tables of Mathematical Functions" (Arnold). This collection includes all the tables in our list and many more. Though they are 5-figure tables, their arrangement closely resembles that of the 4-figure tables; it is an excellent collection, though too extensive for school purposes.

(4) Dale's "Logarithmic and Trigonometric Tables" (Arnold). This collection is an extract from (3), but does not include the first set in our list.

(5) Holman's "Computation Rules and Logarithms" (Macmillan). This collection includes both 4- and 5-place tables, but does not contain Cubes and Cube Roots, or Radians.

(6) Macfarlane's "Elementary Mathematical Tables" (Ginn). An excellent collection (4-place), containing all the tables in our list; other tables are included, of which those of Interest and Annuities and Least Divisors may be specially named. It has also tables for the determination of small angles.

II.—SIX- AND SEVEN-PLACE TABLES.

(1) Barlow's "Tables of Squares, Cubes, Square Roots, Cube Roots and Reciprocals" (Spon), are invaluable in all calculations where these functions are required.

(2) Probably the most generally used set of 7-place tables is that published by Chambers. Natural logarithms and exponential functions are not included; there is a table of Quarter-squares, but not of Cubes or Cube Roots.

(3) Bremiker's Tables (6-place), edited by A. Lodge (Nutt). This is an excellent collection, the interval of $10'$ for the angle in the tabulation of the logarithms of the trigonometric functions making it specially convenient.

(4) Schrön's Tables (7-place), with introduction by De Morgan (Williams and Norgate). As in Bremiker's Tables, the interval for angles is $10'$.

For information on tables, reference may be made to the articles "Logarithms" and "Tables" in Vols. XIV. and XXIII. respectively of the "Encyclopædia Britannica," and to the article *Numerisches Rechnen* in Vol. I. of the *Encyklopädie der mathematischen Wissenschaften* (Teubner).

ORAL WORK IN ELEMENTARY MATHEMATICS.

By W. G. BORCHARDT, M.A., B.Sc.
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FOR sharpening the intellect, concentrating the attention and keeping a class thoroughly on the alert, it will probably be admitted by all teachers that no weapon is so useful as oral work in mathematics. Pupils should be taught to give simple answers quickly without having recourse to pen and paper; they will thus receive excellent training, not merely from a mathematical point of view, but for all those phases of life in which the individual must be prepared for all contingencies, and ready to step into the breach at a moment's notice.

Opinions may probably differ as to whether oral questions should be placed in the ordinary text-book. Many teachers will naturally prefer to construct their questions on the spur of the moment, in order to illustrate some particular point concerning which their classes appear to be weak, and the text-book obviously cannot provide for all such points; for, though successive classes will be similar in many respects, the experienced teacher finds that very different methods will be required from time to time to illustrate the same branch of work. Nothing is more fatal than to adopt stereotyped explanations and methods; the individuals of a class differ so widely that the

teacher must always be prepared with fresh illustrations, and for this end the teacher must always be a learner, ready to imbibe new ideas and acknowledge that perhaps, after all, his methods are not perfect. Teaching cannot but deteriorate so soon as the teacher becomes self-satisfied and refuses to adopt new ideas. There are some questions, however, in oral work on which most teachers will insist, and the object of this short article is to point out some such useful examples.

ARITHMETIC.

In the *metric system* there should be plenty of *viva-voce* work illustrating the change from one unit to another, such as 5.42 metres = 54.2 decimetres = 542 centimetres. In connection with this, practice will be given in the ordinary rules for multiplication and division by powers of 10; e.g., $64.3 \times 100 = 6430$.

One of the most common fundamental errors in the *multiplication and division of decimals* is the misplacing of the decimal point. If teachers would insist on all multiplication and division being performed so that in the multiplier or divisor there is only one figure in front of the decimal point, and moreover insist upon a rough answer being given first, there would be far less chance of the decimal point going astray.

Ex. 1. Multiply 51.4 by 30.2.

The product must be roughly 510×3 or 1530, so that the pupil should at once recognise the absurdity of giving up the answer as 1552.8 instead of 1552.8.

[The advantage of having only one figure in front of the decimal point in the multiplier will be seen as soon as the student comes to contracted multiplication.]

Ex. 2. Divide 370.62 by 17.4.

This is equivalent to finding the quotient of 37.062 by 1.74, i.e., approximately 37 by 2; the result must thus be 18 roughly. Here again, then, the student should recognise that 2.13, instead of 21.3, must be wrong.

Teachers of physics will know how common is this misplacing of the decimal point; pupils who have performed their experiments correctly, and have obtained the correct digits in their numerical results, will probably have the decimal point in the wrong place; whereas a little common sense will make such mistakes impossible. Only by a large amount of oral work can the teacher insist on the necessity of such rough approximations.

Multiplication by 25, 125, etc., should be performed mentally, and the pupils should be taught to recognise when a number is divisible by 3, 4 or 8.

Sums of money, such as £1 11s. 6d., £2 12s., can easily be read off as £1.575 and £2.6, by remembering that 2s. = £0.1 and 6d. = £0.025. The converse process should be practised simultaneously.

In working proportion sums, the pupil should be exercised in obtaining his final fraction with the numbers in their proper position; he is otherwise accustomed to think that every example can be

worked out by direct proportion, and forgets that some examples require inverse proportion.

Since the idea of percentage is used in so many examples, such questions as finding 4 per cent. of 20, i.e., $20 \times \frac{4}{100}$ or $\frac{4}{25}$, will probably be found useful.

Again, in the simplification of fractions, since the L.C.M. of the denominators is so frequently required, the pupil should be able to give the L.C.M. of simple numbers quickly and at sight.

GEOMETRY.

In the elementary and experimental stage of the subject, the number of oral questions which may be asked is practically unlimited. In the more theoretical part of the subject, the student should be questioned continually on the definitions; this is probably the only way of eliminating such answers as "a circle is a figure bounded by one straight line"; "a plane is a flat surface bounded by four or more straight lines"; "an angle is enclosed by a space which meets in a space," etc.

A certain amount of oral work is advisable with the ordinary propositions, though perhaps most teachers will here prefer to rely mainly on written work, as being the only sure method of testing a student's knowledge on the whole of a proposition.

There is a very fair scope for oral work in the solution of geometrical riders, which, by the way, should err rather on the easy than on the difficult side. The mere working of such a rider on the black-board, after the pupils have themselves made an attempt on paper, is comparatively useless, unless the teacher thinks aloud, and tells his class exactly how he comes to adopt his particular method of solution from the given data. It will probably be found interesting to ask members of the class for alternative methods of solution, and then to point out where these methods are faulty.

ALGEBRA.

A very large part of elementary algebra can be treated from an oral point of view.

The idea of the negative quantity and the solution of such examples as—

(i.) Find the value of $8 - 21$

(ii.) " " $3x - 4x + 2x$

will provide plenty of practice.

[In dealing with squared paper work, the student will naturally have plenty of exercise in the determination of the co-ordinates of points.]

This might be followed by examples of the following nature;—

What is the value of—

$$(-6) \times (-3)$$

What is the excess of—

$$8 \text{ over } -3$$

Simplify—

$$a^2 \times a^2, (-7a^2) \times (3a^2), (-48a^1b^2) \div (-4a^2b)$$

Find the square of—

$$-3a^2xy.$$

Evaluate—

$$(3a^2b)(2x^2)^2.$$

Find the cube root of—

$$27x^3y^3.$$

Simplify—

$$7x(x^2 - 2x + 1).$$

Solve the equation—

$$8x = -24.$$

The sum of two numbers is x , and one of them is 40, what is the other?

What is the distance between two towns, if a train travelling at thirty miles an hour does it in x hours?

What is the product of—

$$5 - x \text{ and } 2 + 3x?$$

What is the square of—

$$5a - 3b?$$

What are the factors of—

$$5a^2 - 100?$$

Resolve into factors—

$$27x^3 - 8y^3.$$

Find the H.C.F. of—

$$5a^2b^2 \text{ and } 10a^2b^2c^2.$$

What is the L.C.M. of—

$$x^4y^2z \text{ and } x^2y^2z^2?$$

What is the sum of the roots of the equation—

$$5x^2 + 3x - 2 = 0?$$

Which of the following expressions are surds and which rational?—

$$\sqrt{27}, \sqrt{a-b}, \sqrt{a^2+2ab+b^2}.$$

What is the square root of

$$x^4 - \frac{1}{2}x^2 + \frac{1}{4}?$$

What is the common difference in the arithmetic series—

$$3 - 1 - 5 - \dots ?$$

What is the n^{th} term in the series—

$$x + 4x + 9x - \dots ?$$

What is the arithmetic mean between 8 and 10?

What is the common ratio in the series—

$$3 + 1\frac{1}{2} + \frac{3}{4} + \dots ?$$

What is the geometric mean between 4 and 25?

What is the seventh term of a series of which the n^{th} term is—

$$(2n - 1)^2 ?$$

What is the n^{th} term of the series—

$$1 \cdot 2 + 2 \cdot 3 + 3 \cdot 4 + \dots ?$$

TRIGONOMETRY.

Here the pupil must be questioned continually on formulae such as—

$$\pi r^2, 2\pi r, r\theta, \frac{1}{2}r^2\theta, 180^\circ = \pi \text{ radians, \&c.}$$

Oral methods will probably be the best for making the student *au courant* with the transformation of sums into products, e.g. :

$$\begin{aligned} \sin 15^\circ + \sin 11^\circ &= 2 \sin 13^\circ \cos 2^\circ. \\ \cos 52^\circ - \cos 42^\circ &= -2 \sin 47^\circ \sin 5^\circ, \&c. \\ 2 \cos A \cos 5A &= \cos 6A + \cos 4A, \&c. \end{aligned}$$

Now that we are delivered from the bane of angles of 30° , 45° and 60° , tables of natural sines, cosines, tangents, etc., will afford plenty of opportunity for useful work, and will, moreover, drive home the fact that as the angle increases from 0° to 90° , the cosine diminishes. In connection with this, the graphs of the trigonometrical ratios may be plotted from the numerical values given in the tables.

The student should learn to determine the signs of such expressions as $\tan 220^\circ$, $\sin 310^\circ$, etc., by forming a mental picture of the quadrant in which the revolving line lies, and the knowledge of the

signs of the perpendicular, base and hypotenuse in the right-angled triangle formed.

In dealing with the general value of the solution of an equation, the student should be thoroughly familiar with the fact that if

$$\begin{aligned} \sin a\theta &= \sin bA, \text{ then } a\theta = n\pi + (-1)^n bA; \\ \cos a\theta &= \cos bA, \text{ ,, } a\theta = 2n\pi \pm bA; \\ \tan a\theta &= \tan bA \text{ ,, } a\theta = n\pi + bA. \end{aligned}$$

A large amount of oral work will be essential in dealing with *logarithms*. Pupils should be taught to read off such numbers as 0.008235 and 82350 as 8.235×10^{-3} and 8.235×10^{-4} . One rule, instead of two, will then be sufficient for the determination of the characteristic. The converse process may then be used.

Ex. If $\log 345.6 = 2.5386$, write down the numbers whose logarithms are 1.5386, $\bar{2}.5386$, 0.5386.

Answer—

$$3.456 \times 10^1 = (34.56); 3.456 \times 10^{-2} (= .03456); 3.456.$$

Examples of the following nature will probably prove useful :

$$\frac{1}{3}(\bar{3}.4251) = \frac{1}{3}(5 + 2.4251) = \bar{1}.4850, \quad 3.7785 \times 2 = \bar{5}.5570.$$

MATHEMATICS UNDER THE NEW ARMY REGULATIONS.

By A. E. BROOMFIELD, B.A.
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THE first difficulty that presents itself to the mathematical master confronted with the problem of meeting the new Army requirements with the ordinary machinery of a school, is the compulsory postponement of any qualifying test until the candidate has reached the age of seventeen; a difficulty that is in no way lessened by another regulation, which allows the Sandhurst candidate to give up mathematics entirely, after passing the qualifying test. Were the standard a reasonably high one, there would be less cause for complaint, but as it stands at present there will be a large number of candidates (quite capable of dealing adequately with the preliminary syllabus, but not good enough to take Part I. as against a language or history) marking time for eighteen months until they are allowed to take the examination. As for the very small minority who may find difficulty in passing such a standard at the age of seventeen (in fact, the only non-mathematicians who will not be wasting their time under the regulations, and for whose failing industry the regulation seems almost a policy of protection), that they will be finally extinguished in the competition must be the fervent hope of everyone who has the interests of the Army at heart. Those who have had experience in preparing candidates for the Army will not feel uneasy.

An officer of the line requires general intelligence rather than special genius, and the examiners would have had a better chance of

achieving their object of discovering this if they had made it compulsory to pass the qualifying examination before the age of seventeen and a half, candidates being allowed to present themselves at sixteen. Unsuccessful aspirants for commissions would then have known the worst in time to go out to the Colonies at an age which allowed some chance of their making a success of it, and examiners would have been saved much useless labour in the competitive. I am told that this would encourage cramming; but, if you define "cramming" as "teaching with a definite object in view" and a crammer as "a teacher who is successful in preparing for examinations," much of the horror of the situation is removed. Candidly speaking, we run a great risk of being carried away by what I may call the sentiment of education. I do not write for the theoretical educationist, for the man who talks of "method" and "psychology," and who finds comfort in the word "co-ordination"; I write for the man who has to help boys to a career by passing them through an examination, who is judged by results and who stands or falls by the success of his methods. He knows as well as anyone should who has been teaching Army work in public schools for any appreciable time, that as far as "method" is concerned all his work must be mapped out in detail months beforehand, every care must be taken that nothing is omitted, and that there are no useless digressions. As for "psychology," he must study every individual and be ready to adapt his ways and means to get the best out of him; he must also be stimulating in the highest degree if he is to succeed, and in addition must know what he means to say and be able readily to convey his meaning to others. This sounds very much like good teaching, but whenever it is successful in its results it is dubbed "cramming," without a word of explanation as to what the term means. I think there is still a place in the world for the crammer, whether he earns his wage at a public school or as a private tutor. Whenever a new syllabus comes out the cry goes up, "it is playing into the hands of the crammer." The fact is, however the syllabus changes it is always the same, the crammer still gets his men through. The theoretical educationist proposes the syllabus, but the crammer passes the candidates.

I feel it necessary to make the above defence of the methods I think best to adopt in view of the syllabus demanded. I do not think that the syllabus is a good one, but it would be a mistake for the practical teacher to sacrifice candidates to his pet theories regardless of what is asked for—the error that a British manufacturer commits, who makes what he thinks people ought to buy, rather than what he knows they want, with the consequent failure in foreign competition. The above remarks savour of platitude, but I really believe than more men fail from not "playing to the score" than from common inefficiency.

Bearing in mind the age for taking the qualifying examination in one or other of its forms, we pass

on to the consideration of the possible ways in which the candidates may group themselves. It is highly probable that, with the facilities offered by a joint examination for Woolwich or Sandhurst, any boy who has the remotest chance of making a passable mark in Mathematics I. will stand for Woolwich; one knows from experience under the old scheme how large a proportion of Sandhurst candidates were rejected Woolwich men; and now that the handicap of loss of time in waiting for another examination is removed—in fact, now that there is everything to gain and nothing to lose—we may expect that this tendency will be more pronounced, so far, at all events, as a first try for the competitive is concerned. In the case of a genuine Sandhurst candidate, if fairly good all round, it would pay him to stand on the Woolwich syllabus and count his two best subjects out of the three offered.

After going up once for the competition many will listen to advice hitherto disregarded by their parents, and by giving up Mathematics I. stand for Sandhurst only. But they will have to be prepared for the first examination all the same, for nothing but the cold facts of the published marks will ever persuade the average British parent that the case is hopeless; you show him his boy's mathematical record; term after term his report is couched in the form "works well, but makes little progress," and in addition he is still in a low division. The almost invariable reply is, "Some boys develop late; I remember an old friend of mine, Col. . . ." And the boy goes up. In the present days of keen competition few schools can afford to be dogmatic in this matter; they must accept the inevitable and include it as a fact to be accounted for in making their preparations.

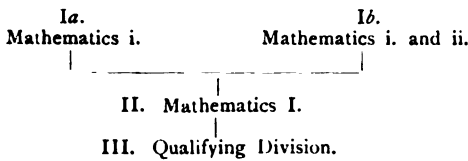
We have, then, the following classes of candidates to provide for:—

- (i.) The really good mathematician who takes Part II.
- (ii.) The fair mathematician who takes Part I.
- (iii.) The very moderate boy whose parents elect that he shall read for Part I.
- (iv.) Those who decide early against mathematics in the competition.

In addition to these, there will in the earlier stages be a certain number of boys not destined for the Army who have to be worked with the others, for very few schools will afford a staff big enough to allow of subdividing from the very first; besides, in cases where Army candidates are few in number it would be otherwise difficult to graduate them in mathematical sets, to say nothing of the loss of the stimulus of competition. I should propose to meet the needs of the qualifying examination with as little marking time as possible in the following way. The divisions at the top of the mathematical school should include one in which the programme of work is slightly more than is required for the qualifying examination; e.g., I should extend the geometry syllabus to a theoretical as well as a working knowledge of similar triangles and proportion, and go as far as

simple surds and indices in algebra. No boy should be promoted from this division till he had passed a genuine qualifying test (I should suggest his obtaining 60 per cent. in each of three test papers set during the term), and no boy who intends to give up mathematics after the preliminary should be allowed to go up at all. It may seem to some immoral to keep down a boy who is fit for promotion, but, if the subjects of the qualifying examination represent the limit of his mathematical ambition as shown by his choice of subjects for the final, I think it better that he should stay down and make certain of success in them rather than go up to harder work in which he has no interest, to the detriment of those who have.

The mathematical divisions would be arranged roughly as below:—



Non-army boys, if sufficiently numerous, could form a separate division Ia.; in the case of Army boys being in a minority they will either have to be worked alone as above, or the general school programme will have seriously to be restricted to meet their special needs, if a genuine effort to pass them is to be made.

Coming to the details of the separate subjects for the preliminary examination, we find them to be: (1) arithmetic; (2) geometry; (3) algebra; (4) practical work.

There is nothing new in the *arithmetic* syllabus, except that the metric system is rightly made more prominent, and approximate methods substituted for recurring decimals. Mensuration questions are by far the best means of teaching the metric system; moreover, it is often easier to convert English measures to metric, to work the question in metric and reconvert at the end, when weights and volumes are involved. Scales and all measurements of length belong properly to this section; the actual drawing of a scale presents purely technical difficulties, and it will be found to be a great saving of time in the end if the boy is made familiar with all the processes of calculation before he attempts to draw even one. Verniers, calipers, micrometer screw-gauge, and spherometer, might all be included with the arithmetic syllabus, and have the very distinct advantage that they do not require a fitted laboratory to teach them in. Scales—that is to say, plain scales—calipers, micrometer screw-gauge, might be taught from the first; the last-named is an excellent illustration of the decimal system. Diagonal scales, verniers and spherometer may be reserved till a later period.

As regards *geometry*, the question is more difficult; of the many books that have recently appeared on the subject none seem quite to meet the needs of the Army candidate. What is wanted is a book containing unadorned proofs of all the propositions retained by the Committee

of the Mathematical Association, printed in their natural order, with such obvious modifications as regards individual treatment that may be necessary, and with a good collection of riders at the end. The writer of a modern text-book is apt to attempt to do all the teaching himself; the result is that many text-books are excellent manuals for the teacher, but bewildering masses of information for the pupil. I am of opinion that it is better in every way for the pupil to possess the "skeleton" in print, and depend for the explanation upon his own efforts and attention to what he is told; he can revise more quickly, and is clear in his own mind as to what he understands and what he does not. In dreamily reading over pages of explanation of all sorts of real and imaginary difficulties, full of detail on the simplest point, a boy is very apt to think he understands it all and fail to notice the real crux. The alternative is to be so alarmed at the prospect of the number of pages to be got through that he does not revise at all.

The *practical geometry* should be kept separate; the theory should be well known before any attempt is made to produce results by drawing. Technique should be practised purely as technique at a very early stage, so that when the time comes to do practical geometry proper there should be no unexpected difficulties to overcome in the manipulation of instruments, set squares, &c. Much time is now wasted by endless construction of triangles and drawing of circles to illustrate but two or three ideas. Sketch constructions with the angles and dimensions figured take a tenth part of the time, and are a more powerful teaching instrument. Of course it is necessary to be able to draw accurately, but this should be learnt by means of some sort of preliminary syllabus, such as the following:—

Elementary constructions; bisecting lines, copying and bisecting angles; easy cases of constructing triangles and polygons from given dimensions.

Parallels and perpendiculars with set squares.

Bisecting lines, constructing equilateral triangles, regular hexagons, squares, &c., using set squares only.

Inscribed and circumscribed circles.

Regular polygons.

Copying geometrical patterns.

The above would be suitable work for the very earliest stages; it should indeed be done at preparatory schools. Facility in working would be easily acquired, and a great amount of time would afterwards be saved in advanced work depending on accurate draughtsmanship.

Harder problems, such as are frequently set as practical geometry, depend for their solution entirely upon theory; there is very little actual drawing involved, and they are best treated as riders, being dealt with in connection with that part of theoretical geometry to which they belong.

There is little to be said about *algebra*, except that it should be carefully impressed upon the boys that a graph that is not self explanatory is quite useless. Every graph should be carefully indexed,

the vertical and horizontal scales clearly indicated, and should have an explanatory heading. Points are best indicated by means of a small circle round the point as centre, the centre being *pricked with a needle*, thus \odot ; a black dot made with a pencil does not tend towards accuracy, and is likely to be obliterated by the curve when it is drawn.

Graphs are useful as an illustration of what is meant by a "solution" of simple simultaneous equations and quadratics, but as a general method of solution are both cumbersome and inaccurate. For equations of higher orders, however, very good approximations may be obtained, but in all cases the portions of the graph giving the roots should be drawn on a large scale, care being taken in choosing the vertical scale, so that the curve may cut the line as nearly as possible at right angles.

The *practical work* may very easily be divided into two parts, the part (such as scales, &c.) that can be done in any class-room and the part involving weighing and use of water that can only be done in a laboratory. With the large divisions that fall to the lot of a mathematical master in the middle part of a public school, laboratory work is apt to take a great deal of time for small results; the average small boy derives very little but amusement from laboratory work when he can get but a minimum of personal attention (I do not in any way refer to 'discipline'), moreover the range is so small as to be readily done in two terms at a later stage. I think that the reasons for and objects of the experiments should be well known before the boy himself carries them out, and recommend the postponement of this course till it can be done with the smaller divisions higher up the school.

There will be many gaps in the work, caused by absence from illness and other causes, and the only plan to ensure that every boy has carried out all the experiments of the course is to keep a "squared paper" record and initial each experiment when it has been satisfactorily performed. A good plan is to dictate the skeleton of a method of writing down the result of an experiment, allow the boy to use his note book till he can do it readily, and then have the experiment done satisfactorily without any notes at all. It is most important that a boy should be able to state clearly what he has done, and why he has done it.

In another article I propose to discuss Mathematics, Parts I. and II., and to give a list of books suitable for use in preparing for both these and the preliminary examination.

AN International Exhibition of Pedagogy, under the patronage of H.M. the King of Spain and of H.M. Queen Maria Christina, will be held in Barcelona from May to October, 1905. Particulars as to the scope of the exhibition and the conditions attaching to exhibits are given in the official programme, a limited number of copies of which can be obtained on application to the Director of Special Inquiries and Reports, Board of Education Library, St. Stephen's House, Cannon Row, Whitehall, London, S.W.

AFTER EUCLID?

By A. CLEMENT JONES, M.A., Ph.D.

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AN important change in the teaching of geometry has been generally adopted during the last two years. It has been changed from the purely theoretical to a mixture largely practical. This modification has now been adopted sufficiently long for the mathematical teacher to judge, at any rate partially, of its effect, and to differentiate the good from the bad. It should now be possible to assign practical geometry its correct place in geometrical teaching, and to determine what features in these recent changes are destructive of sound geometrical results.

Taking a general view of the new methods in their relation to the pupil, it seems to me that pupils may be divided into three classes. First, pupils with distinct mathematical ability; for them the old methods of geometry produce a clearer and more substantial result. They are able to acquire Euclid rapidly, and, not being worried with details, can understand the beauty of Euclid's logical treatment as a whole, and obtain more rapidly a sound foundation for future mathematical studies. Secondly, the average pupil, who acquired Euclid with considerable difficulty, mainly in a detailed way, and with no clear ideas of geometrical definitions. In this case, without doubt, practical drawing has made the subject more attractive, more valuable, and also easier. I find the average boy keener and more enthusiastic, and as we have to cater for the average boy, this is a great point in favour of the new method of teaching. Thirdly, there is a comparatively small class of pupils who never would, probably never could, acquire any reasonable amount of Euclid. For such the drawing exercises are valuable; they can take a reasonable interest in a considerable part of the work, and acquire a knowledge of some geometrical forms and of some useful geometrical results. They certainly derive benefit from the present teaching, whereas formerly they derived none. It is unfortunate that such a division of pupils should not be practicable in every school, so that at least in the later stages they could be taught on different lines. At the present time pupils are considered far too much by educational theorists as equal units who can acquire equal quantities of the same subject in equal times by the same method; the absence of such undesirable uniformity need not be remarked.

Now to consider the subject more in detail. The science of geometry differs from most others in this, that the collection of facts which the student is expected to learn is valuable chiefly in virtue of the rigid proofs which can be applied to these facts: the student by the study of geometry obtains a knowledge of the demands of proof, and learns to require a high standard of proof, which, if intelligently acquired, he can apply to a more general class of facts. For if the object of geometrical study is merely to acquire a workable knowledge of that rather restricted class of geometrical facts

which, in a narrow sense, can be said to have a practical application, I do not hesitate to say that such geometry can be learned more rapidly and satisfactorily elsewhere than in the mathematical class-room.

It is important, then, that this most valuable result of geometrical teaching—namely, the understanding of the word “proof”—should not be lost sight of by the mathematical teacher. Many teachers, I understand, are of the opinion that under present conditions the idea of proof acquired by the student is less satisfactory than under former conditions. That this is in general true cannot but be admitted by anyone who has examined a large number of pupils in elementary geometry in the last two years. The drawing of particular cases tends naturally to such a result: no tendency is so difficult to eradicate in all mathematical subjects as that which leads pupils to prefer a particular case to a general, and to consider the proof of such a case entirely satisfactory. I hope to have something to say on the proper function of drawing in geometrical teaching in a future paper.

Otherwise, this tendency to slackness of proof is partly due to a difficulty which seems to have been overlooked—viz., the previous teaching which the pupils have received in the art classes. It would be interesting to know how far teachers in general have found real difficulty from the fact that their pupils have in practical geometry acquired art-room methods, which are often only approximate, or experimental, or do not admit of elementary proof. The difficulty, even if a slight one, points to the advisability of the art and mathematical teachers co-operating, and so arranging their respective syllabuses that the instruction received in the art room may not interfere with the pupil's understanding of geometrical proof.

Probably, however, this unsatisfactory result is due mainly to the large variety of non-authoritative text-books. Euclid, the long-established authority, has in general been abandoned; on the other hand, no sequence of important propositions of an authoritative character has taken its place. If I recollect rightly, a correspondent once suggested in THE SCHOOL WORLD that chemistry had long been taught from a variety of text-books, and therefore why not geometry. The answer is surely obvious, and contains the crux of my contention—namely, the difference in character and aim of the two subjects.

Not only are the text-books various (and by various I do not mean simply by different authors, but rather refer to the arrangement and selection of the matter), but further, many inspectors advise teachers to write their own course of geometry, and give the same to their pupils as lecture notes. It seems to me that the position of a boy passing from one teacher to another in such circumstances is much the same as it would be in the case of French if each teacher were to adopt his own system of pronunciation.

The need is not for an authoritative text-book, but for an authoritative sequence of propositions.

Given a really authoritative sequence of important propositions generally adopted, text-books or individually written courses based on it would be practical, and might well be an improvement in many respects on Euclid. Without such a recognised sequence it seems to me that there can be little co-ordination of the geometrical work.

The statement that “the absence of a sequence is beneficial” premises a perfect teacher, and that any one boy remains with the same teacher during the whole of his school career. When one considers that every boy as he advances through a school passes from master to master, and at the same time remembers how easily a pupil is confused by a change of method, it would seem a dictum of common-sense that at any rate in any one school a definite sequence of propositions and methods of proof should be agreed upon; but even perfect co-ordination in particular schools does not cover the general difficulty, considering the larger number of pupils who change schools at all ages, and the still larger number who will do so when the co-ordination of our secondary, higher grade, and elementary schools is complete. It is not merely that pupils of the same age or standing may have acquired a different set of facts, but that pupils in the same class have learned from different teachers different postulates, different axioms, and such different order and method, that the teacher must often be at a loss to decide what superstructure to build on such a variety of foundations.

Any mathematical teacher or tutor has surely experienced the same difficulty in teaching geometrical conics. In examinations in this subject so much depends on the book from which the examiner acquired his fundamental knowledge of the subject. A rider based on Besant's propositions may be difficult, but at the same time be an immediate application of a proposition in (say) Taylor's “Conics,” and *vice versa*. I have heard University examiners complain of the difficulty of examining candidates for scholarships in this subject, and the result is that less prominence is given to this work in scholarship papers every year.

To return: I am by no means anxious that the teaching of geometry should be stereotyped throughout the country or confined to fixed grooves, but I do not think that a well-established foundation for the subject would have this objectionable result, while at the same time it would co-ordinate the work of teachers in general, and make soundness of proof a certainty. Geometry is of little mathematical importance if the student does not obtain a clear and crystallised conception of the methods of proof of those fundamental propositions on which the subject is based.

I gather that many teachers are in favour of retaining Euclid's sequence, if any sequence at all is to be adopted. There is much to say for their point of view, but the majority, I imagine, feel that a considerable improvement is possible, and that the study of geometry can be made easier for beginners by re-arrangement and by the omission of many propositions which are of interest only from the point of view of philosophical soundness;

consequently, it will be more practical to consider here a sequence likely to meet with more general approval.

The teacher is still necessarily influenced to a considerable degree by the syllabuses of the various examinations for which the pupils under his control are entered. At this point it may be well to inquire into the character of the schedules in geometry published by some of the more important examining bodies, and to see how far they suggest such a sequence as that above referred to.

No examination syllabus at the present time insists on any particular sequence, but several indicate the propositions the candidate is expected to know, which it may be assumed, therefore, the Board consider as fundamental; and in the case of those based on the Report of the Mathematical Pass Examination Syndicate at Cambridge, June, 1903, the propositions are arranged in order, and perhaps one is justified in assuming that the sequence given is at least intended as a suggestion, though not insisted on.

These examining bodies have recognised the possibility, or even the probability, that a departure from Euclid's sequence, with no substitute, would lead to slackness of proof, and in all the syllabuses some provision is made to meet this possibility. The Oxford and Cambridge School Board give a note to the effect that "any proof of a proposition will be accepted which *appears* to the examiners to form part of a systematic treatment of the subject." The Cambridge Local Examination authorities substitute for systematic treatment "a logical order of treatment"; while the Oxford Local Delegacy accepts "any method of proof which shows clearness and accuracy in geometrical reasoning." This surely is highly unsatisfactory; the very use of the word "appears" suggests doubt. Further, in a paper in which candidates are asked to prove, say, some half-dozen propositions from the first book of Euclid, it is surely next to impossible to decide whether a candidate is quoting propositions out of the order in which they have been learned. If pupils are taught to refer back to former propositions—and I for one can see no other method of systematic treatment or logical order—how in a general examination are they to indicate satisfactorily such propositions and their positions? It might be insisted upon that candidates should quote in full the enunciations. Even then the position of the proposition quoted in the particular logical treatment they had acquired would not be clear. The old familiar landmarks have disappeared, and Euclid I. 32 has become Smith I. 5 or Jones III. 16. In reference to this question of quotation an established sequence would have a further merit of limiting the number of propositions which should be considered quotable.

The Oxford and Cambridge School Board attempts another solution of the difficulty. It is stated that "so far as possible candidates should aim at making the proof of any one proposition complete in itself." This requirement presents many difficulties, one being that it demands more

judgment from a pupil than can fairly be expected. One wonders how often a particular pupil might prove, say, Euclid I. 4 in the course of the same paper in his attempt to make every proof "complete in itself." Again, in questions of a practical character considerable judgment is demanded. The Cambridge Pass Examination Syndicate, for example, states, "In cases where the validity of a construction is not obvious the reasoning by which it is justified may be required." In my experience I have found that pupils consider any construction known to them as "obvious." The purpose of an examination is to discover what a pupil knows, and the only way satisfactorily to discover this is to ask questions, leaving no doubt as to the answer required. The value of practical questions is, I consider, to find out whether a pupil has a clear idea of the practical application of his theoretical work to particular cases.

From the point of view of general fairness in examinations, this uncertainty as to methods can produce serious inequalities. I was acting as assistant examiner some time ago in an elementary geometry paper. One question asked was Euclid I. 8, and the mark assigned by the examiner was five. Now, a large proportion of the candidates proved the proposition as in Euclid, which being allowed by the syllabus, was a complete answer, and scored full marks; on the other hand, many candidates proved the proposition by the method of drawing an equal triangle on the opposite side of the base, which method gives rise to several cases, all of which were laboriously written out. To mark these higher than five would have been unfair to the other candidates who had fulfilled the conditions of the syllabus.

The next point which arises from an examination of the syllabuses concerns all those propositions which were termed "problems." At present these are collected in a separate schedule (A), and there is little indication as to whether they are to be treated as purely practical or whether proofs may be required. If the former is the correct reading it seems to me unsatisfactory. As matters of proof these problems are quite as interesting as the theorems, and are also required for the strict proof of theorems. To accept the constructions without proof must have a bad influence on the theoretical work. If the pupil may assume as true a problem which he can draw, why should he not assume as true a theorem which to him is equally obvious? The examination of practical questions where full explanation and possibly proof of the method adopted is not required is extremely difficult. An examiner of wide experience in some of the above-mentioned examinations put this to me recently in a concise manner: "Modern methods in elementary geometry seem to me interesting for teaching but hopeless for examination."

So far as the propositions selected as fundamental are concerned, the schedules of the Oxford and Cambridge School Board and the Cambridge Local Syndicate (modelled on the recommendations of the Cambridge Syndicate), and the Oxford Local (modelled on the report of the Committee

of the Mathematical Association), could without serious alteration be brought into coincidence. In the first book of Euclid, prop. 16 is omitted by two; its omission is to be regretted because the construction is useful in a considerable number of riders, and, moreover, the propositions which depend on it are thus easily proved. Euclid I. 48 is only retained by the Oxford Locals. All three syllabuses omit Bk. I, 1-3, 7, 17, 20-22, 24, 25. I. 20 is generally omitted, and is, I suppose, to be regarded as almost axiomatic, depending on the definition of a straight line. I. 24, 25, seem to me sound, and necessary for riders dealing with inequalities. In Euclid III. the differences are greater, some dozen propositions being omitted or retained by the Oxford Local which are retained or omitted by the others. It is difficult to understand why some have been left out: *e.g.*, III. 26-29 are surely requisite.

The sequence of propositions suggested by the Cambridge Syndicate is, I think, open to little objection; some difficulties naturally arise. The order of the propositions is affected by the permission to use hypothetical constructions. This permission meets at once the objection raised above to the omission of proofs of problems, since one can construct hypothetically a perpendicular to a straight line, a bisector of an angle, parallels, an equilateral triangle, and a triangle equal to any other! No special note is given stating whether the Syndicate agreed with the recommendation (9) of the Committee of the Mathematical Association—*viz.*, "that proof of congruence by superposition, and in particular of symmetry by folding, should be considered fundamental methods of proof." Personally I consider this recommendation a mistake. There is no form of proof which appeals less to the average pupil, or which seems to him less satisfactory, than superposition; while the proof by symmetry and folding is, I fear, a direct encouragement of that very slackness of proof which is complained of. The sequence under consideration does not fortunately require such methods except in the case of Euclid I. 4, and it is perhaps worthy of consideration whether the fact that a triangle can be drawn from the given data without alternative solution is not in itself the most evident proof of congruence.

Schedule B of these regulations begins with Euclid I. 13, 14, 15. There seems to be a general unanimity of opinion that this course is desirable. If the definition of an angle is based on the idea of rotation, these propositions follow from the definition, and form easy first exercises for the pupil. Following these are I. 27, 28, 29, 30. This sequence requires either (1) a new definition of parallel straight lines, involving the idea of direction, in which case 27 follows easily from the definition of an angle; or (2) it may be based on some property such as "only one perpendicular can be drawn from a point to a straight line," as in French text-books. Next come the propositions relating to triangles, 32 and cor., 4, 26, 5, 6, 8, and the case of right-angled triangles with the hypotenuse and one side equal. This order has

the advantage that 26 can be used to prove 6, the old proof being too difficult for beginners. Prop. 18 follows, for which I. 32 can be used instead of I. 16. Then 19, 34-40, among which is prop. 36, for the proof of which Euclid employs the omitted prop. I. 33.

In Book III. the propositions occur in the order 3, 26-29, 14, 18, 19, 11, 12, 20, 21, 31, 22, 32, 35, 36. This order necessitates proving 26 and 27 by superposition; the method is, however, more easily followed in the case of circles than of triangles. Also 11 and 12 would have to be proved by symmetry or the preferable method of limits. Euclid Bk. IV. is apparently consigned to the limbo of the practical.

This sequence, then, presents no great difficulties, and even those objections which might be raised could be easily removed by the addition of a few propositions. To show the suitability of such a sequence is comparatively easy, to point out any practical method by which the universal adoption of it could be secured in our schools is of the highest order of difficulty. If, however, I have succeeded partially in convincing any mathematical teacher that an authoritative sequence of important propositions is a desideratum, or, better still, if this paper influences the many who agree with me to make their opinion known and arouse discussion on the point, much has been achieved. The necessity is, I admit, difficult of complete proof, because the main argument in its favour is the bad effect of the present uncertain system on the pupils, and through them on the subject itself, which bad effect can only be proved by experience. That geometrical teaching should die out of our schools, or should take a less important place than now, would be surely, all will admit, most serious mathematically. Such a danger, I feel, exists, and the responsibility for it lies with the practice which leaves too much to the individual opinion of the teacher, who too often is not competent to invent for his class a "systematic treatment," and is consequently driven to adopt untried text-books, hastily written to meet the revolutionary proposals generally adopted two years ago.

A Preparatory Course in Geometry. By W. P. Workman and A. G. Cracknell. viii. + 56 pp. (Clive.)—We can cordially recommend this little book as an excellent piece of work that deserves the careful consideration of all teachers who may have difficulties in regard to the preparatory training in geometry. The range of the book is somewhat restricted, being confined practically to simple rectilinear figures, but the arguments urged in the preface in favour of the restricted range, though not perhaps absolutely conclusive, are of great weight. The instructions for testing and using the drawing instruments, the selection of problems and the hints on the methods of assessing marks for the work, are all satisfactory. It would, we think, be found to lead to greater accuracy if the sides of a triangle were not terminated at the vertices, especially when the circumscribing circle has to be drawn; a thin terminated straight line is not so easy to estimate accurately as a segment whose ends are marked as indicated at the top of page 5.

ALGEBRA AS GENERALISED ARITHMETIC.

By J. M. CHILD, B.A.

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MUCH of the difficulty which undoubtedly exists in the initial stages of the teaching of algebra, and in the more advanced work, on account of badly-conceived and badly-digested ideas of the first principles of the subject, might be obviated if the system—in general use, I believe, on the Continent—of teaching algebra as “generalised arithmetic” were more widely adopted.

In my own experience, I have found the great stumbling-blocks to be :

- (a) The start.
- (b) The fractional multiplier in arithmetic and the negative multiplier in algebra, *i.e.*, the idea of an operator.
- (c) Translation of the data of problems into the equations necessary for their solution.
- (d) In addition to these difficulties, there is the fact that, under the usual system, the use of logarithms is either delayed unwarrantably, or else taught as a purely mechanical device for saving a lot of arithmetical work.

I hope to show in the following scheme how these stumbling-blocks may be avoided without, I hope, a charge of “dodging difficulties” being made.

As soon as the pupil is thoroughly grounded in the “First Four Rules” of arithmetic, let two, three, or four hours per week be apportioned in the time-table to “mathematics,” no distinction being made either in the time-table or in the teaching between the separate subjects to be taken during these hours. Proceed with decimals, taught on the “local value” method; introduce the metric system by consideration of the relation between centimetres and inches on the scale used for the geometrical drawing, which should be started, and, whilst approximations and rough tests for decimal multiplications and divisions are being taught, rapidly pushed on until “Construction of triangles and rectilinear figures to given dimensions” has been reached. The notation a, b, c , for the sides of a triangle, having been explained, it should be insisted on that a, b, c are *numbers*. This idea may be more thoroughly driven home by practice in the mensuration of the more simple solids, such as the sphere, cube, block, cylinder and cone.

Encourage the student to make verbal formulæ, such as :—

(a) From arithmetic : “Interest equals principal multiplied by rate per cent. and number of years, and divided by 100 ;”

(b) From geometry : “Area of a triangle equals half the product of the length of the base and the height ;”

and casually suggest the use of letters as a sort of mathematical shorthand, on the principle of one’s infantile “A stands for an Archer.”

The formulæ being reduced to $I = P \times R \times N \div 100$, and $A = \frac{1}{2} b \times h$, practice in the evaluation

of these and similar formulæ will lead to the idea of variables, constants for a given problem, and absolute constants such as the arithmetical numbers and such letters as π . This ratio, or *abstract number*, will have been obtained experimentally in the mensuration of the circle, the cylinder and the cone; and its consideration affords a good opportunity, not to be missed, of discussing measurements to scale, and thus giving the youngest of pupils a thoroughly good idea of what a ratio is; for *all measures of quantities are ratios*, a fact too often passed over.

The algebra has thus been started; and, what is of the highest importance according to my thinking, the start has been imperceptible; in fact, I see no reason why the pupil should know he is doing “algebra” till much later.

From this point I propose to follow algebra alone, supposing graphs to be introduced, and with the other subjects to keep pace with the teaching of algebra, bits of each subject being taken in a single lesson, or several consecutive lessons being devoted to one subject, as occasion demands.

As the work in the manufacture and evaluation of formulæ progresses, show that it is usual to reduce the formula for, say, a rectangular block, from $V = a \times b \times c$ to $V = a.b.c$, or more simply to $V = abc$, the signs of multiplication being omitted: to clinch this—and, at the same time, to instil another idea—contrast “sixty-nine,” as represented by the figures 69, with “ x - y ,” as represented by $10x + y$, and not by xy . Then introduce the definitions of *factor*, *continued product* and *power* in a lesson on arithmetical prime factors; showing, say, how $144 = 2.2.2.2.3.3$ may be shortened to $144 = 2^4.3^2$. If, then, the “figure in the postage stamp corner” be boldly defined by its three names, “exponent,” “index,” and “logarithm,” the connection between index and logarithm cannot be missed.

The theory of indices should then follow naturally from examples (oral preferably) on evaluation, of the following types:

Ex. 1. $2^5, 3^2; a^2, a^3, 2^a, 3^a$ when $a = 4$.

Ex. 2. $a^3, 4^b, a^b$, when $a = 5, b = 2$.

Ex. 3. $a^b, a^c, a^b \times a^c, a^{b+c}$ when (1) $a = 2, b = 3, c = 1$
(2) $a = 3, b = 2, c = 4$

These, plenty of them, would lead, at any rate the smarter pupils of a class, on questioning, to deduce the “Law of Indices” for *positive integers*, and the usual symbolic proof without substitution will clinch the matter for the whole class.

Then proceed with the evaluation of examples of the type:

Ex. 4. Find the value of m^n when

$$m = 4, 3, 2, 1, 0,$$

$$\text{and } n = 3, 2, 1, 0.$$

Here the pupil will find no difficulty in understanding what o^n stands for, but m^o will have no *arithmetical* meaning, according to the way in which a *power has been defined*.

“But it looked like a power before substitution, and so it does after substitution. Let us suppose it is a power, and as such obeys the ‘Law of Indices,’ that has already been obtained for posi-

tive integral values of the indices, and on this supposition try to find a meaning for it." Thus:

$$a^b \times a^c = a^{b+c} = a^b.$$

Hence multiplication by a^0 leaves another power of a unaltered, and therefore it is equivalent to unity.

Suggest finding meanings for a^n and $a^{b/q}$ in a similar manner, and, having done so, work through a great number of *arithmetical* examples with fractional and negative indices.

Logarithms can now be introduced with every confidence of their being understood; if 10^3 , 10^4 , 10^5 , 10^6 are calculated, and their products found, by approximation, a graph of $y = 10^x$ can be drawn and the method of interpolation can be explained.

In this connection, it is advisable to have accustomed the pupil to the use of the "standard form" of writing decimals: thus, 3.2876×10^3 for 3287.6 , &c., and then the rules for the characteristic can be given simply as:

"The characteristic is the index of the power of 10 necessary to bring the number to standard form."

Addition and subtraction come next, and the negative sign explained as a loss or backward step (graphs are useful) should present no difficulty.

Areas of rectangles may be used for the explanation of fractional multipliers in arithmetic and negative multipliers in algebra; the idea of the meaning of the "operator" being introduced naturally as in the above method for indices. Most text-books give this method for indices; but, for negative multipliers, either give the accurate but, to the beginner, totally unintelligible extended definition as an "operator, which performs the same operation on any quantity to produce the product as it performs on unity to produce itself, or slur the difficulty altogether. I call to mind a proof (?) in one otherwise excellent text-book, something like this:

$$\text{Since } +a(+b) = +ab;$$

$$\text{Hence } +a \times (-b) \text{ must be different (cf. mf.)}$$

$$\therefore +a \times (-b) = +ab.$$

I suggest that, having proved experimentally that the area of a rectangle is given by the formula $A=lb$ or bl , where l , b , are the measures of the lengths of two adjacent sides, the COMMUTATIVE LAW be deduced from this, and that this be assumed to be the law for all multipliers. It follows at once that

$$6 \times \frac{1}{3} = \frac{1}{3} \times 6 = 2;$$

thus converting the unintelligible "one-third times" six into the intelligible "six times" one-third.

One may then proceed thus:

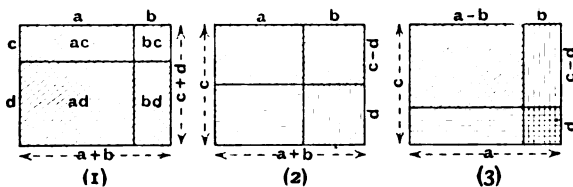
$$a \times (-b) = (-b) \times a$$

and " a times $(-b)$," where $-b$ is considered as a loss, is intelligibly interpreted as a "total loss of ab " = $-ab$. Hence multiplication by $-b$ produces a product of equal value arithmetically but of opposite sign to that produced by multiplication by b .

$$\therefore (-a) \times (-b) \text{ has a different sign (cf. sup.) to } (-a) \times (+b).$$

$$\therefore (-a) \times (-b) = -[(-a) \times (+b)] = -(-ab) = +ab.$$

But I find the following way more readily grasped. Show geometrically from figures 1, 2, 3, that



$$(1) (a+b)(c+d) = ac+bc+ad+bd,$$

$$(2) (a+b)(c-d) = ac+bc-ad-bd, \text{ if } c > d,$$

(3) $(a-b)(c-d) = ac-bc-ad+bd$, if $a > b, c > d$; the rectangles whose areas are ac, bc, ad, bd , being cut out of paper.

Assume this to be true, whatever a, b, c, d , may be, then from (3),

$$\text{If } a = 0, d = 0, (-b) \times (c) = -bc,$$

$$\text{If } b = 0, c = 0, (+a) \times (-d) = -ad,$$

$$\text{If } a = 0, c = 0, (-b) \times (-d) = +bd.$$

In this way, not only is the rule of signs explained in a form readily understood, but at the same time the idea of distribution of a multiplier instilled.

With a class of good students, Chrystal's elegant method of illustrating products by the sign of the area of a rectangle may be given, but it will probably be too hard for the generality of beginners.

Lastly, the difficulty which beginners have in setting down the data of a problem symbolically is, I know from experience, almost entirely done away with by tackling problems without any preliminary drill in solving equations.

Start with some such problem as: "The sum of two numbers is 17, and their difference is 7; find them." Commence the solution as follows:

$$\text{Greater number} + \text{smaller number} = 17 \dots (1);$$

$$\text{Greater number} - \text{smaller number} = 7 \dots (2).$$

Now suggest the use of the initial letters g, s , for the words "greater number," "smaller number," being careful to bring out the fact that the letters g, s , are really figures representing the values of the numbers, as well as simple abbreviations for the words. Then continue:

$$\therefore g = s + 7$$

$$\therefore g + s = (s + 7) + s = 2s + 7$$

$$\therefore 2s + 7 = 17 \text{ by (1)}$$

$$\therefore 2s = 10$$

$$\therefore s = 5$$

$$\therefore g = 12$$

hence the two numbers are 5 and 12.

Give reasons (cf. Euclid's axioms), not rules, for each step in the working; especially should it be shown that the rule for changing the sign of a quantity brought from one side of an equation to the other depends on the axiom, "if equals be added to equals the sums are equal."

Next give some problems in which the use of initial letters is not convenient, and—"Let us call it x ." (Do not always use x .) If, then, several problems are worked, the class assisting, on the black-board in words and in symbols, the two solutions being side by side and corresponding step by step with one another, the pupil will soon get

over the difficulty of symbolic expression. Even then I would press the point that no equations that are not connected with some problem of a more or less interesting nature should be given.

In conclusion, I would like to urge the uselessness of all unsupervised home-work for elementary students. All practice should be class-work and, where possible, oral.

PRACTICAL MATHEMATICS.

By R. WYKE BAYLISS, B.A.
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THERE is at the present time a very remarkable agreement in favour of practical methods of teaching, and an equally remarkable disagreement with regard to the meaning and application of such methods. This indicates a period of transition rather than of growth, so that the individual opinions of one who has had the opportunity of testing some of these methods may help in the general work of reformation.

Much of the opposition to so-called practical mathematics is due to misunderstanding. Some regard "practical" arithmetic as the neglect of all that trains the reasoning faculties, and insistence upon a mechanical drill in the applications of arithmetic to business or science; precisely the opposite view is taken by practical teachers. Upholders of Euclid believe that practical geometry will banish logic and substitute diagram-memory. Others are convinced that the study of Euclid trained the memory of words, phrases and figures alone, without developing the logical faculties; and that the reasoning powers can only be strengthened by a judicious course of practical work.

Since there is such a diversity of opinion, it will be as well to state at length what meaning is here attached to the word "practical."

In arithmetic it means:—

giving concrete illustrations and examples wherever possible; avoiding long rows of scarcely intelligible figures and complicated fractions;

postponing technical applications which involve a knowledge of cumbrous systems of tables or business procedure;

using "graphic" methods with freedom in the solution of problems.

In geometry it means:—

regarding geometrical magnitudes as measurable quantities;

using scales, protractors, compasses, squared paper, or any other simple apparatus to elucidate the nature of the subject;

treating every proposition first as a *problem* to be solved before proving it logically as a *theorem*;

basing the whole teaching upon a few fundamental principles, instead of connecting all the propositions together in any arbitrary sequence.

In the case of algebra it implies:—

use of graphic methods in the solution of equations;

avoiding difficult questions in multiplication, division, factors, fractions, &c.;

postponing the general theory of H.C.F., L.C.M., surds, indices and other bookwork;

early introduction of easy surds, indices and logarithms.

In trigonometry it denotes:—

free use of tables of sines, cosines and tangents;

finding heights and distances of objects in the class-room or field;

postponing all cases requiring cumbrous formulæ or elaborate proofs;

early introduction to the uses of the theodolite, sextant, prismatic compass, &c.

To sum up, "practical" mathematics connotes the following ideas:—

(a) breaking down the old "water-tight compartments" between the different branches of the subject;

(b) close alliance between the science and the mathematical teaching;

(c) training the boys' minds and developing their powers of observation, instead of cramming their memories with facts and formulæ;

(d) substituting a "kinetic" mode of thought, by means of which a wide range of physical ideas can be rapidly traversed, instead of the "static" mode which bound certain ideas closely together, but excluded others altogether from view.

The details of such a scheme are now being hammered out in hundreds of schools, and one must hope that shortly a sufficient advance beyond the experimental stage may be made to enable some degree of organisation to be carried out, and thus harmonise the curricula of schools and colleges with public examinations.

A detailed report upon the teaching of school mathematics, drawn up by a committee of masters actually engaged in teaching, is expected shortly and will not be forestalled in this article. If such a report tends to promote unity amongst educationists it will have fulfilled its purpose. It would, however, be a mistake to look for any such uniformity as would hamper the freedom of individual teachers. The present chaos is due to the cast-iron rigidity of the previous system, which left no room for initiative until the accumulated pressure of suppressed thought burst its bonds under the magic touch of science. Any return to such a system will be fatal to the progress of education. But without entering fully into the details of a mathematical course, it may be possible to indicate the scope of practical mathematics in the class-room and suggest the lines upon which these details are to be sought.

The decimal notation should form the foundation of the arithmetical teaching. For this purpose every boy should be supplied with a ruler graduated in centimetres and millimetres, and also in inches, tenths and perhaps hundredths of an inch (diagonally).

There is a common idea that multiplication and division of decimals cannot be taught to boys who do not understand vulgar fractions. If this implies that they cannot be taught the mechanical process, it is clearly absurd. But, if it means that they cannot be made to understand the reason for the process, then it is a complete mistake. It is, in fact, only by avoiding vulgar fractions that a true grasp of the decimal system can be inculcated.

Whether it is wise to spend much time in teach-

ing very young boys the reasons for certain processes, which they can easily be taught to practise, is of course a matter of opinion. Boys hate thinking, but they love doing. There is no difficulty in making the average boy understand why in multiplying a number by 2000 he must double each figure and move it three places to the left, but it is one thing to make him know why he does it and quite another thing to make him say why he does it. So also (provided that he is told the extended meaning of multiplication, which cannot be avoided under any system of teaching, though it is often slurred over), there is no particular difficulty in making him understand why in multiplying a number by 0.002 he must double each figure and move it three places to the right. Yet, although he knows the reason, he may be unable to express it in words, unless forced to learn them by heart.

The main pillar of the arithmetical teaching will, of course, be proportion. Comparison of inches and centimetres will be a valuable exercise for the beginner. He should draw diagrams of various objects in the class-room—the door, the walls, windows, maps, &c.—to different scales. He can then proceed to such questions as the following: "Mark four points on squared paper, indicating the four corners of the floor. From the diagram find the lengths of the diagonals of the floor and the distance between the middle points of two adjoining sides."

For the early part of the course no instruments will be needed beyond graduated rulers, and perhaps sets of imitation coins for illustrating money-problems; but to obtain the best results the teacher must constantly set concrete questions. When boys are told to multiply 57.6 by 8.23 they may do it at once without any difficulty, but tell them to find how many ounces of salt there are in 57.6 pints of water, each pint of which contains 8.23 ounces of salt! Then ask one (of the dozen out of twenty who gaze stolidly at the blackboard) what he is waiting for. As likely as not his reply will be: "I don't know whether to add or subtract!"

Avoid dealing with quantities the nature of which the boy has not yet grasped. For instance, on no account teach him square measure until he has not only seen square inches and square centimetres, but also found out *for himself* how many square millimetres there are in a square centimetre and how many square inches in a square foot.

Cubic measure should be introduced by means of actual cubes, which may be blocks of wood, or they may be constructed of paper or cardboard by the boys themselves. It may not be convenient to supply knives or scissors, but much can be done by folding; or the boys may do the drawing in the class-room and the cutting-out as homework.

Much of the geometrical teaching will thus have been absorbed by the class unawares, and it will only be necessary to supply the pupils first with protractors and afterwards with compasses in order to complete that course. More advanced

classes in arithmetic should work numerous examples graphically on time and speed.

With pupils sufficiently advanced to be able to express their own ideas in words, the geometry may be taught in some such manner as follows. Suppose the lesson to be upon the properties of the isosceles triangle. Each pupil should draw his diagrams from details supplied by the master and then write an account of his work under five headings.

(i) *The Problem.* This will either be dictated or written on the blackboard; e.g., "Draw a triangle, ABC, having $AB=AC=4$ cms. Measure the angles at B and C."

(ii) *The Construction.* Here the boy describes, entirely in his own words, how he drew his figure; e.g., "I drew a line AB, 4 cms. in length, and then drew another line AC, of the same length, and joined BC."

(iii) *The Observations.* In many cases the class must be told what to look for, otherwise some will say, "I observe nothing," or "I observe that AB is 4 cms. in length." But in this simple case we may expect some such answer as follows: "I observe that in my first figure the angles at B and C are each 56° . In the second figure they are each 18° . In the third figure, $B=72^\circ$, and $C=73^\circ$, but I see that AB is a little longer than AC."

(iv) *The Conclusions.* Here it will often be necessary to warn the class not to write a mere repetition of their observations and yet not to wander from the question. The brighter boys will write, "I conclude that, in any triangle, if two sides are equal the two opposite angles must be equal." Some will omit the word "opposite," or "in any triangle"; others will note the result of three sides being equal; a few may investigate the converse theorems. It is by means of such details that scope is given to develop originality, insight and power.

(v) *The Proof.* Only the cleverest boys will be able to give a logical proof without assistance, but it is most instructive to watch the more intelligent boys brighten up at the suggestion, "Suppose we consider what would happen if we could fold the triangle about a straight line bisecting the angle BAC."

It will be seen that this method of teaching develops five distinct powers, viz., the sense of form in drawing the diagram, the sense of number in measuring lines or angles, the power of comparison in making the observations, the power of generalisation in writing the conclusions, and lastly, the logical faculty in giving a formal proof. The method in which Euclid was taught not long ago developed the last of these alone, if any! Of course, that was not the fault of Euclid. The trouble arose from several causes, such as putting a text-book into the hands of young boys; the examination system, and the apathy produced in teachers by the constant use of a hide-bound tradition. Another trouble was the rigidity of Euclid's sequence, which destroyed all originality, both in the scholar and in the teacher. Any proof of one proposition by another, unless the latter is one of

some half-dozen fundamental theorems (such as Euc. III. 20), should only be given as a rider and never made the principal proof of an elementary theorem. The chief proofs should be based upon the fundamental ideas of rotation, translation and folding, together with a few elementary *loci*. The present writer has found it convenient to have one course dealing with properties of the straight line alone (including angles, triangles, parallelograms, &c.), and another course dealing with properties of the circle.

Practical algebra does not seem to present the same difficulty to the ordinary form-master which he finds in the modern development of arithmetic and geometry. Most boys also pick up the ideas of graphic solution and the use of logarithms with comparative ease. It seems, therefore, unnecessary to say more upon that subject, the only apparatus required being squared paper and mathematical tables. However, the co-ordination of this subject with arithmetic and geometry must not be neglected. Unexpected trouble may be found in dealing satisfactorily with the matter of Euclid Book II. by means of algebra and with the formulæ derived from the science work.

In the case of trigonometry it is delightful to instruct the older boys in the use of delicate instruments when the school possesses such treasures, but for beginners no such expensive apparatus is necessary, the chief requisites being cardboard, protractors and pins. A couple of strips of the cardboard can be adjusted on a flat piece by means of the pins, until the required angle is observed at the junction of the strips. This angle can then be measured and the numerical calculations made on returning to the class-room. For more advanced students cheap models of a theodolite can now be purchased which give excellent results.

It will thus be seen that a fairly extensive field of practical mathematics can be covered without the assistance of any elaborate apparatus and without leaving the class-room for the laboratory. Indeed, the cost of the few instruments here described will be more than compensated for by banishing unnecessarily expensive text-books and substituting—in the case of boys—cheap sets of examples, suitable note-books and question cards, and—in the case of masters—a variety of hand-books which ought to be supplied free of charge by the school. A few cones, pyramids, &c., may occasionally be borrowed from the physical laboratory; or the mathematical master can co-ordinate his work with that of the science master. Thus, after experimental determination of weight, volume, or density in the laboratory, the boys should work examples thereon in the class-room; but the nature of area and volume is most easily illustrated with paper or cardboard. For instance, the determination of the surface of the cylinder is more readily understood by a boy who has made his own cylinder by rolling up a sheet of paper. Too much laboratory work is inadvisable, since it will leave no time for acquiring facility in calculation.

In conclusion, a word of warning seems necessary. A teacher who fails to understand the

object of the modern system may use it merely to drive facts into the boys' minds, or he may concentrate his attention upon making accurate workmen and neglect the educational value of the system. Such are the fears expressed by opponents of practical mathematics, but the true danger lies in the opposite extreme. The modern method, when properly handled, stimulates the faculties of observation and reason to the utmost, and makes the boys think as they have never been taught to think before. Now the mental energy required for this purpose is clearly diverted from its former path, which led to the development of memory, neatness, application and numerical accuracy. The results of the modern method must, therefore, be closely watched, lest by applying it at too early an age, or too exclusively, we may indeed produce a race of keen observers, original inventors and trained logicians, but devoid of the memory to retain their observations, the accuracy to perfect their inventions, and the application necessary to complete a chain of reasoning.

EQUIPMENT FOR THE TEACHING OF PRACTICAL MATHEMATICS.

By G. H. WYATT, B.Sc., A.R.C.Sc.
Emanuel School, Wandsworth Common.

THE object of this article is to afford information concerning the most suitable appliances for a course in modern practical mathematics carried on in an ordinary secondary school. The writer supposes such a course to be commenced in a lower form and carried on to the top of the school.

DECIMALS.—The teaching of the meaning of decimals constitutes the first division of the subject, and for this it is suggested that a rod of constant section be taken, and divided in tenths and hundredths. It is understood that the rod is not merely graduated, but is actually cut up into these parts, which can then be separately exhibited and handled by the pupils. The serious nature of a mistake in the position of the decimal point can be made evident in this way.

COMPASSES, &c.—For actual measurement and drawing the necessary appliances will include pencil, scale, compasses, protractor, and a set square. The pencil should be moderately hard, and the use of a fine point made obligatory. For maintaining this point small slips of wood, to which are glued strips of fine glass-paper, will be found a great saving of time and pencils.

The choice of a suitable compass will be ruled by the expenditure allowed. Except for the lowest forms, it is of great advantage that the compasses be provided with needle points. Mr. A. G. Thornton¹ supplies a needle-point $\frac{1}{4}$ -in. compass, for pencil only, double jointed, at 1s. 2d.

¹ A. G. Thornton, 41, King Street, W., Manchester.

net, and of a quality quite suitable for secondary school class-work. It is unnecessary to speak of the ordinary school compass, which may be obtained from any of the firms supplying scientific apparatus; but the teacher will find the lists of Messrs. Thornton, Harling,² Stanley,³ and others, of great value in obtaining ideas as to the cost of more highly finished instruments.

The choice of scale, protractor and set square will not be a difficult matter: the ordinary qualities may be procured from any of the firms supplying scientific apparatus. For the use of the highest forms, we may suggest reference to the lists of Messrs. Harling, Stanley and Thornton. Here are described squares of transparent material, vulcanite, &c., or squares made from mahogany or cherry and edged with hard wood or ebony, at prices ranging from 6d. to 2s. for the sizes most commonly used. The same remarks will apply to protractors; the exhibition, at least, of a good quality instrument should be a valuable object lesson to the pupils, impressing them with the fact that very accurate measurements of angles are considered to be matters of great importance.

AREAS.—Squared paper for area measurements is also obtainable from any of the firms mentioned here. For the preparation of irregular areas to be measured by a class the use of a French curve is suggested. A large number of these are shown in the catalogues referred to above, and they are very cheap, the prices ranging from 2d. to 1s. each for sizes extending from 5 inches to 16 inches across. Harrison's graded scale curves should be of special value. The curvatures are related to one another in the manner shown by the figures printed on the material of the curve. The prices for specimens in pearwood run from 3d. for a 5-in. curve to 8d. for a 13 $\frac{3}{4}$ -in. curve, corresponding sizes in transparent material costing 1s. 6d. and 4s. 3d.

EVALUATION OF π .—The measurement of circular and elliptical areas which require the use of π will naturally suggest to the teacher the advantage of his pupils actually obtaining the value of this constant at least approximately. For this purpose pins, strips of thin paper and a supply of wooden discs, accurately turned, will be necessary. The discs may be obtained from any of the firms supplying school apparatus, a set of five with diameters ranging from 2 in. to 8 in. costing 1s. 9d.

VOLUMES.—For volume measurement the boxes supplied by practically all firms, and known as the "Pupils'" set, may be highly recommended. The models furnished are ten in number, and are well finished in hard wood. Six geometrical figures cut from cardboard are also contained in the set, and the price, 1s. 6d., cannot be said to be high. Larger models of the forms mostly used can be obtained from Messrs. Baird and Tatlock,⁴ or Messrs. Townson & Mercer,⁵ in whose lists descriptions and drawings may be found.

The teacher will probably wish to show his

class a verification of the calculated volume of a model by the method of displacement, and for this purpose a side-spout vessel, which Messrs. Townson & Mercer supply at a cost of 1s. 6d., will be found very suitable.

A most useful assortment of objects for measuring—rectangular, triangular, hexagonal and circular plates; lengths of rectangular and circular-section rods; rings, and hollow cylinders, all of various metals, may be obtained from Messrs. Griffin & Sons,⁶ or Messrs. Townson & Mercer. These objects are arranged for a course recently drawn up for the London County Council.

The accurate measurement of the dimensions of the models will necessitate the use of well-adjusted calipers, and the pupils should at least be shown the value of a superior form of this instrument. A very complete list of various designs of accurate calipers is published by Messrs. C. Nurse & Co.⁷ Sliding brass calipers, to measure 2 $\frac{3}{8}$ in., marked in inches and millimetres, can be had from 2s. each; to measure 4 in., the price of the same form is 2s. 6d. Steel sliding calipers, provided with a vernier, are supplied from 4s. 6d. upwards. All these calipers are furnished with clamping screws. For the determination of the diameters of wires a micrometer caliper may be obtained for 4s. 6d., and for those whose financial arrangements will allow, superior forms of this instrument measuring up to 2 in., reading to 0.001 in., and provided with a ratchet stop, may be obtained for 39s. 6d.

OUT-DOOR WORK.—Where small classes are the rule, surveying in a simple form will probably be undertaken. It may be that here we are trespassing on the future domain of the teacher of geography, but in any case the details may be of use. Messrs. Pye and Co.⁸ supply a cheap substitute for a sextant, which they call the "Anglemeter." Reference was made to this instrument in THE SCHOOL WORLD of October, 1904, and it will suffice to say that its cost is 12s. 6d., that the graduations read to two degrees, and that by estimation smaller differences may be obtained.

SLIDE RULES.—For the examinations of the Board of Education in practical mathematics, candidates are expected to be provided with slide rules, which can now be obtained for a much smaller expenditure than was formerly necessary. Mr. Thornton has issued a very cheap form known as the "Kensington" slide rule, which in hardwood costs 2s., and in polished boxwood 3s. 6d. There are the usual two logarithmic scales on the front, the lower one being of double the magnitude of the upper one. The cursor is of clear celluloid. On the back of the rule, which is 10 $\frac{1}{2}$ inches in length, are found tables of sines, tangents, and three-figure logarithms of the numbers 1 to 1,000. Messrs. John Davis & Son⁹ supply a 5-inch celluloid slide rule, with cursor, at 6s. 6d. The same firm issue a 10-inch boxwood rule, specially constructed for use in technical colleges, at 4s. 6d. This rule has

² W. H. Harling, 47, Finsbury Pavement, E.C.

³ W. F. Stanley & Co., Ltd., Great Turnstile, Holborn, W.C.

⁴ Baird & Tatlock, Cross Street, Hatton Garden, E.C.

⁵ Townson & Mercer, 34, Camomile Street, E.C.

⁶ John J. Griffin & Sons, Sardinia Street, Lincoln's Inn Fields, W.C.

⁷ C. Nurse & Co., 182, Walworth Road, S.E.

⁸ W. G. Pye & Co., Granta Works, Cambridge.

⁹ John Davis & Son, Ltd., All Saints Works, Derby.

the two log scales on the front face, one edge graduated in any desired units, and a metal cursor. The price includes a card of formulæ and book of instructions.

There are two special points concerning the higher grade rules made by Messrs. Davis, to which we may call attention. The first is the introduction of a steel spring back, which serves to overcome the effects of expansion and contraction. The price of a 10-inch rule thus improved is 10s. 6d. For extreme climates, at an additional cost of 1s. 6d., adjusting screws are inserted along the rule, the use of which allows the slide to run smoothly at all times.

A most useful addition to the ordinary rule is an extra slide divided to give the values of $\log(\log x)$. This slide is used in conjunction with the lower (or more open) scale of the ordinary rule. The value of this "logologarithmic" slide will be understood when it is remembered that the ordinary rule will give squares and square roots, cubes and cube roots, but that this new slide will give any power or any root.

As examples, the values for $(2.4)^{\pm 1.3}$ or of n in the expression $(1.3)^n = 1.6$, or of a hyperbolic logarithm, or of any power of e , may each be found by this new slide. The cost of a 10-inch rule, with extra slide, is 15s.

PANTOGRAPH.—This instrument should be useful in demonstrating the ratio of areas of figures, irregular or otherwise, enlarged or reduced, in their linear dimensions, by any assigned ratio. It may be obtained at artists' materials stores in the cheaper forms from 1s. each, and from many of the firms mentioned in this article, in more accurately finished qualities.

CURVES.—In connection with curve drawing, two articles supplied by Mr. W. J. Brooks¹⁰ call for special mention. The first is a substitute for French curves, and consists of a thin steel or celluloid strip, which may be bent to follow any desired curve, and fixed in position either by one's finger tips or by a series of small parallel clamped bars. The former pattern in steel for a length of 8 inches costs 2s., and in celluloid 1s. 6d. The latter, which is more useful to a draughtsman, is made in lengths from one foot upwards, and costs 4s. 6d. These curves would seem to be useful to the teacher in preparing a large scale drawing of the curves which the class is studying. The second useful article, supplied by the same firm, is a parabolic sheet of celluloid, accurately cut, with the axis and *latus rectum* engraved upon its surface. The cost of the curve is 1s., and it should become a very popular item in the outfit for the more advanced classes. Mr. Brooks issues a pamphlet explaining the uses of the curve in connection with extraction of square roots and the solution of equations.

PLANIMETER.—It may be of service to remind teachers that Amsler's planimeter can now be obtained from many firms at a cost of 45s. for an instrument measuring area in square inches, and

at 53s. for one measuring in four or five different units. As an object lesson in the clever application of mathematics to a useful purpose, the planimeter should be welcomed for the stimulation of senior classes.

Tables of logarithms, and a list of useful constants and formulæ, are published by the Board of Education in the syllabus for practical mathematics at a very low price, and can be obtained through any bookseller.

THE TEACHING OF HIGHER ARITHMETIC.

By F. KETTLE, B.A.

Co-Principal of The Clapham School.

ARITHMETIC has slight title to respect if we consider its use merely in daily practice. Most necessary calculations demand only skill enough to check a bill or to count the change out of a sovereign. Accordingly all ought to have a working knowledge of the multiplication table, facility in adding or subtracting sums of money and sufficient courage not to be daunted on the rare occasions when it is a question of determining approximately the yards of carpet for a room, or the interest on a slight investment: this last operation may, however, as a rule be left to the banker.

How, then, are we to explain the high place this subject retains in most schools, and the levity with which we toss big chunks of a child's school years into its monstrous maw?

No doubt the introduction of banks and the rapid spread of the credit system have had much to do with the stimulation of interest in arithmetic; but the economic changes are not of themselves competent to explain the highly ritualistic or orgiastic practices of many schools. Perhaps the most convincing and least romantic explanation is that arithmetic lends itself most readily to a rule-of-thumb treatment; it is a school-made subject, and had it not been popular with the teachers it would long ago have been held up to ridicule. Anyway, the only present value of the ordinary arithmetic lesson seems to be the evidence it affords of the teacher's pedagogic efficiency.

The conclusion forced upon us is that the most practical of all subjects is taught in the least educative way, and that the arithmetic of most schools is a highly artificial product of no use to anyone. When the "Curiosities of the Time-Table" come to be written it will occur to someone to ask why a subject which, compared with geometry, is relatively new, and has not had to free itself from the bonds of authority and tradition, has yet succeeded in attaining to an academic distinction without parallel in any other province of mathematics.

Why, in the name of rationalism and common sense, should we worry children into discovering the exact moment that the two hands of a clock are together, or the amount, to the fraction of a

¹⁰ W. J. Brooks, 13, Fitzroy Street, W.

penny, of a sum of money put out at compound interest, or the proceedings of imaginary discount, or the vicious habits of recurring decimals, or the exact financial state of a man after an apparently fortuitous series of investments and re-investments? Once, in an idle moment, I copied down the following fraction with the intention of having it properly mounted and framed as a document unedited for the use of historians in the thirtieth century :

$$\frac{4\frac{3}{8} + \frac{1}{4}}{8 \cdot 16 - 3 \cdot 3 + \frac{1}{8}} \text{ of } \frac{\frac{7}{15}}{1\frac{2}{3} + 3\frac{1}{4}} - \frac{0 \cdot 07 + \frac{1}{10} - \frac{1}{9}}{0 \cdot 53} \text{ of } \frac{1\frac{3}{4} + \frac{1}{9}}{1\frac{1}{2} + 0 \cdot 2225}$$

Who would not gaily descend with Dante into the lowest pit of the Inferno rather than consort with the inventor of such an instrument for one poor half hour? The modern arithmetician has his prototype in the Sans-Joy of mediæval legend.

Not long ago I wandered into a school and found a class hard at it finding answers to a lot of shamelessly mechanical questions. To my inquiring glance the master replied, "accuracy and rapidity:" fateful formula that has brought to naught many hours bright with promise of light and warmth. In a girls' school two whole terms were devoted to G.C.M. and L.C.M., and at the end of the time the girls regarded the process by which they found the result as a sort of magic, and no more to be reasoned with, or believed in, than the juggler who turns sixpences into half sovereigns.

So much for that picture; now look on this.

Arithmetic is the "recording" angel of the chemist and physicist, of the craftsman, surveyor and architect; it is the companion of geometry and perspective, and the interpreter of algebra and trigonometry. As soon as man substituted measuring and weighing¹ for vague *a priori* speculation, alchemy passed into chemistry and astrology into astronomy; crude opinions as to the science of life became the verities of social science. "Man is a political animal," said Aristotle; he might as well have defined him as the animal that measures and weighs.

I propose now to consider some aspects of the higher teaching of this subject that appeal to me as an educationist, and to hint at a possible extension of it.

MEASUREMENT.—It ought not to be forgotten that measuring in itself merely for the sake of tabulating distances has little educative value. The measurements should be put to some use, should really be needed in an investigation; otherwise interest in the exercises will drop, and the teacher will soon feel that his new method is the old method in a new dress—the matter is changed, the orientation is the same.

A great value of measuring exercises and drawing to scale is that the pupil learns from it that all his results are approximate, and that his scale-drawing cannot have much value unless it can be depended on as accurate within certain known limits of error; he will also feel from time to time,

as his hand and eye become more and more under control, some of the joy of the craftsman. Later in life he will understand that all art is simply a complex of emotion and skill.

I add a few exercises in illustration of my meaning:—

Draw this large cube of wood as it appears: what sides are not parallel in your drawing? Are they parallel in the object? Of the vertical edges, which appear to be the shortest? Can you account for this difference in the shape of a cube as it appears and as it really is?

The windows of a house look on a common with ponds and trees. If you drew the common on the window—that is, made a rough sketch of what you saw—where would the near and the distant parts of the common be represented in your drawing?

Hold a lead pencil vertically and at arm's length in front of you. Close one eye and measure with your pencil the vertical edge of the picture on the wall.

Make a rough sketch of the floor of class-room as it looks to you. Now, draw a rough plan of it; check your plan by careful measurement, and then make a drawing of it to scale.

Exercises of this type should be devised by the teacher until the pupil has got hold of a few principles of perspective. He is then ready for scale-drawing, the drawing of plans and elevations of simple solids. He will draw first a rectangular solid in perspective; then after measurement he will draw it distorted, and finally he will set out to scale the plan and elevation.

Here are a few more examples:—

(1) Two roads, OA and OB, run respectively direct east and north. Find the distance between A and B, given that OA = 2 miles, and OB = 3 miles. (Scale, 1 inch = 1 mile.)

Make a drawing to show directions of roads and positions of A and B, and then measure the distance from A to B.

(2) A tourist walks across country, his directions are 1 mile east, 2 miles north-east, and 3 miles west. How far is his finishing point from his position at start?

(3) The sides of a rectangle are *a* and *2a* feet long respectively. Draw rectangles, giving *a* any values you like. How would you test whether all the rectangles are of the same shape?

(4) A and B are two drawings of a playground, but differing in size. A is approximately correct, but B is very inaccurate. How could you show that B is inaccurate by reference to A?

(5) Draw any triangle ABC; bisect AB in D and through D draw DE parallel to BC cutting AC in E. Compare the length of BC with DE.

(6) Make AD = $\frac{1}{2}$ of AB, and draw DE as before. Compare the length of DE and BC.

The reader will infer the aim of these specimen questions: he will see that their purpose is to lead the pupil to discover for himself much that formerly came very late in the school course, if at all. The part of the teacher here and throughout is to act as mentor; his vocation is to prevent his pupil from frittering away his time on wholly sterile or very slightly productive ground.

The next step is the determination of areas of plane figures. Very little need here be said on this subject, as it is treated very fully in many text books. What I would urge, however, on the young teacher is, that pupils should not be told that the area of a triangle is $\frac{1}{2}bh$, and that of a circle is πr^2 . They will discover these formulæ for themselves quickly enough if they are only left alone.

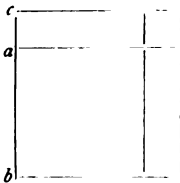
¹ I do not confuse *number* with weighing and measuring. Had the ancients done so, the Oxford chemists might have been anticipated by two or three hundred years.

A very interesting piece of work may be suggested at this stage. Draw two columns and fill in as follows:—

Side of Square.	Area of Square.
1	1
1'05	1'1025
1'005	1'010025
1'0005	1'00100025

From these figures it is seen that when the side of a square is changed from 1 to 1'0005, the area of the square is changed from 1 to 1'00100025.

Before drawing any deduction from these figures let the pupil examine the two squares given below, and put to him the question: By how much is one square greater than the other?



Imagine² the greater square to shrink gradually until the difference between the two squares is almost equal to the very thin rectangles, $ab \times ac$. The only error in this assumption is that the little square in the corner is disregarded.

$$\therefore \frac{\text{Increase in area of square}}{\text{Increase in side}} = \frac{2ab \times ac}{ac} = 2ab \text{ nearly.}$$

If this result is compared with the arithmetical work we see that

$$\frac{0'00100025}{0'0005} = 2 \times 1 \text{ very nearly.}$$

Now look at it another way: if x = side of small square and y = area of this square, that is when $x = 3$, $y = 9$, and when $x = 4$, $y = 16$, and so on, we see that the relation of y and x can be expressed by

$$y = x^2.$$

Suppose x is increased by a small quantity h , and suppose further that the corresponding increase in y is p , the statement would be

$$y + p = (x + h)^2 = x^2 + 2hx + h^2$$

$$\therefore p = 2hx + h^2.$$

If we disregard h^2 and divide through by h , we have

$$\frac{p}{h} = 2x.$$

The reader will see that the pupil has been led to the discovery that if

$$y = x^2$$

$$\frac{dy}{dx} = 2x.$$

The same conclusion can, of course, be reached by drawing a parabola and using it to get the desired curve $y = x^2$. A little later the wonderful result,

$$\int 2x dx = x^2,$$

² This exercise is merely intended as a rough indication of the way in which results in higher work may be adumbrated.

will flash on the pupil with its almost dazzling brilliance.

It is superfluous to speak of graphs, as their use is now generally recognised. It is a pity that teachers do not remember that, since a graph, if not a straight line, takes up a considerable amount of time to draw, it is advisable to make each graph yield up its full meaning before passing on to another.

Another investigation, typical of a class of questions in which arithmetic may be made to suggest the construction of a geometrical problem, may be in place here.

It is required to draw a square equal to a given rectangle. Draw a line 10 cms. long. Divide this line into any two parts, say 7 cms. and 3 cms.: now the area of the rectangle under these two parts is 21 , and therefore side of square = $\sqrt{21}$. Similarly, when the sides are 6 and 4, the side of square = $\sqrt{24}$, and so on. Find from a table-book the square roots and set up distances 4'58 and 4'9 at points 3 and 4 cms. from one end of the line. Draw a smooth curve through the points thus obtained, and it will be seen that they all lie on the circumference of a semicircle, radius 5 cms. There are many other problems and theorems in geometry that it is well to allow arithmetic in the first instance to reconnoitre.

APPROXIMATION.—If all the other changes in the new method were to be swept away, and the arithmetic of our youth restored in all the plentitude of its dulness, and yet this practice retained of asking for a result to be true only within certain limits, it would gain enow and something to be very proud of. Right down at the bottom of the school, where the children are just beginning to lisp in numbers it would be excellent training to accustom them to give approximate answers, as, for instance, that a third of 11 is more than 3 and less than 4, and that a fifth of 1s. 7d. is $3\frac{1}{2}d.$ + or $4d.$ —

Problems of this kind very early might be proposed. If lead pencils are between 3 and 4 inches long, between what lengths would four lead pencils be? A more difficult question would be, find the greatest and least area of a rectangle, given that the possible lengths of its sides to the nearest millimetre are 5'7 cms. and 2'8 cms. long respectively.

Another admirable rule is to insist that the pupils before showing up their work should compare their result with a rough check or first approximation: for instance, that $3'7 \div 0'52$ is about $7\frac{1}{2}$.

The great value of these exercises is that each problem has to be thought out on its merits. Any boy can be trained into sending up an accurate result; it requires alert intelligence to use just as many figures as are necessary to secure the degree of accuracy asked for, or to tell before setting pen to paper what roughly a result should be.

The reader, if he has not already lost patience, and turned to another article, may say, what has all this to do with arithmetic? My answer is that arithmetic, as ordinarily understood, has been adequately dealt with in previous numbers of THE SCHOOL WORLD. The object of this article is to

show that we are only just beginning to realise the great dignity and value of the subject as a mental discipline.

EDUCATION IN THE CROWN COLONIES.¹

IT is not easy to give a notice of these volumes with any reasonable approach to adequacy.

The ground covered is co-terminous with the British Empire, and the variety of detail is literally amazing. Their production is satisfactory evidence that the energy of the Special Enquiries Department of the Board of Education has not abated, and that we are still being provided with enough evidence in matters of educational organisation to bring to despair all efforts after generalisation.

Some seventeen Crown Colonies tell their tales in these substantial books, and if the indolent reviewer is unable to deal justly by them, he can yet lay his hand on his heart and recommend enquirers to go no further for detailed information. As a matter of fact, to those who can interpret the signs properly, these *exposés* of educational history and organisation are an epitome of the social history of each area discussed.

They possess certain common features, or, at all events, show that the colonies reproduce many points, good and bad, which English educational history has made familiar to us. The beginning has almost always been made by religious bodies; these, again, have almost always found that the task has become too heavy for them; and then the State has stepped in. With the State have come traditions and institutions, transferred bodily from England.

This last may be, probably is, inevitable. Very rarely do the colonies seem to have imported some one who was bold enough to start afresh, warned by the errors of the motherland. No; here we have, time and again, the English codes down to their very words: "elementary" and "class" subjects; payment by results; the old-man-of-the-sea in an annual examination; and in some places even "free" education. In Bermuda, apparently, children between 9 and 11 spend a year or more in "pointing out nouns." Some colonies have "public examinations" of a general-parade character, exactly on the model of the ancient British schools, when bedizened parents and relatives assembled for the purpose of hearing their bedizened little ones produce on the application of the predestined question the predestined answers.

It is something more than interesting to note that the "trained teacher" has not always been a success in the colonies, "as far" (in the artless words of the writer on British Honduras) "as the advancement of education was concerned; for in

the year 1863 those sections of previous Acts requiring the appointment of such trained teachers were repealed, as such appointments had been attended with great expense and much disappointment." Look a little closer, and you will find that the much disappointment, so feelingly mentioned, arose mostly from the fact that the poor underpaid drudge could not produce the only kind of result that could be mechanically recorded. And one colony (not British Honduras) broke a man's heart in less than two years for this very avowed reason.

One of the ablest of the reports in these volumes is the short account by Mr. H. E. D. Hammond, of the System of Education in Southern Rhodesia. Really for an intelligible and coherent account of what is the usual course of policy, and for a thoroughly philosophical view of the process as understood by an enlightened organiser, his few pages would be hard to beat. They show the necessary absence of women and children from the pioneer class; then the uncertainty of the situation and the unwillingness of governments to commit themselves to social schemes the issue of which must be doubtful; the appearance of the missionary, and his double function. First a few European children will receive instruction at home, then the central authority will assist, and, sooner or later, extend the education already operating; land is granted for church and school purposes combined; municipalities give a liberal helping hand.

With some rare exceptions, the religious "difficulty" never shows its hydra-head in the colonies. "In the old country," as one witness, a Jew, says, "the barriers between the different churches were high and forbidding, but in Rhodesia the walls were very low, and they often shook hands over them, and longed for the time when even these low walls might be swept away." And even in Natal, we are told, riven as it has been by church dissensions of which few partisans know the meaning and origin, a common Scripture syllabus has been frankly accepted by both church and chapel.

One most noteworthy fact is brought out very clearly in these pages. It has been already told us by a competent observer that South Africa—the South Africa that *grows*—is passing, educationally, into the possession of the Roman Catholic Church. He might justly have said that there is no teaching organisation in all the colonies at this moment pursuing a more definite end, with so far-reaching a view, with such a grip on its instruments, as this great society. What the unresting work will produce socially it is not easy to see; but certainly the number of professing Roman Catholics and Roman Catholic institutions in the colonies will be enormously augmented.

It is not always easy to make out from the writers of these various reports whether they are speaking of white or coloured education; this invalidates many of the conclusions that might easily be drawn from the statistics and facts set forth. In some cases it is clear that they are dealing with mixed schools, of a type which in other

¹ "Special Reports on Educational Subjects." Vols. 12, 13, and 14; being Accounts of Educational Systems in the Chief Crown Colonies of the British Empire. Pages 474, 345, and 371. 2s., 1s. 8d., and 1s. 8d. (Wyman & Sons.)

colonies would be impossible. The great problem before those colonies in which there is a healthy and increasing coloured population is, how to provide for the material and spiritual progress of this section without interfering with the whites; and those who can solve it will deserve better of the generations that are to come after us than all the "educationists" within the British dominions.

THE CHELTENHAM LADIES' COLLEGE. NEW SCIENCE WING.

A NEW wing covering an area of 800 square yards was opened at the Cheltenham Ladies' College on May 13th, during the celebration of the Jubilee of that institution. The primary object of the building is to provide suitable accommodation and modern equipment for instruction in science, the whole of the first floor being devoted to this purpose, but there are also six commodious class-rooms on the ground floor to be used chiefly by students preparing for London University examinations, and a large art room on the upper floor. The wing has a handsome elevation in Gothic style, harmonising with the remainder of the College buildings.

The suite of science rooms on the first floor comprises:—

Physics: lecture room, advanced laboratory, elementary laboratory, preparation room, dark room. *Chemistry*: lecture room, advanced laboratory, elementary laboratory, preparation room, two store rooms, book room, balance room. *Botany*: laboratory and lecture room, microscope room, plant room. Provision is made elsewhere in the college for zoological and elementary physiological teaching.

The elementary physical laboratory, 36 feet by 21 feet, is fitted with firm tables to which gas is laid on, but not water, the water supply and sinks being at the sides of the room and easily accessible from the tables. This room is also provided with a demonstration table and wall benches for balances.

The physical preparation room opens into both the elementary laboratory and lecture room. The latter is 23 feet by 17 feet 6 inches, and has tiers of seats arranged to insure an uninterrupted view of the lecture table from every seat. In addition to indispensable fittings, the lecture table contains a large sink with adjustable top and glass sides.

The advanced physical laboratory, 22 feet by 19 feet, is arranged similarly to the elementary laboratory, except that slate slabs, supported on stone pillars built up from the concrete floor, are provided for accurate work. By means of curtains suspended from a matchboard framework in the ceiling, one corner of the room is convertible into a dark room. All windows in the physical rooms are also fitted with dark blinds.

The chemical lecture room, 26 feet 6 inches by 22 feet, has a gallery of seats accommodating forty students. The lecture table is 15 feet by 3 feet, and, besides the ordinary services and

sinks, is provided, at short intervals, with waste pipes and draught flues covered by adjustable hoods of varying heights, also a large sink with glass sides, similar to that in the physical lecture table, and illuminated from the back by incandescent electric lamps. In the wall behind the lecture table are two openings which have glazed sashes both in the preparation and lecture room. These are connected with the exhaust system, and besides facilitating the preparation and removal of apparatus, also act as fume closets. Like all the other fume closets, they stand on bases of Yorkshire flag-stone and have sinks or wastes as well as gas and water supplies. Above the preparation room is a dark room and a small store which communicates with a flat on the south side of the roof supplied with gas and water for experiments requiring bright sunshine or the use of offensive materials. The preparation room leads into the elementary chemical laboratory, 36 feet by 22 feet, affording accommodation for twenty-four pupils. The accompanying photograph illustrates the arrangement of the working benches. The bottle racks on these benches have plate-glass shelves and no backs, so that they interfere but little with the supervision of the class. On each bench are two light draught hoods, which can easily be removed if more space is required. The electric light and gas are controlled from the front of the bench. The cupboards on one side of each bench have movable shelves and panelled backs, which give ready access to the flues and waste pipes. Each bench has a separate gas and water control, accessible through the end door shown in the photograph. At one end of the laboratory is a slab of Yorkshire flag, for use with furnaces; at the other, draught cupboards



Elementary Chemical Laboratory, Cheltenham Ladies' College.

and a hot closet. The floor of the hot closet consists of steel coated with copper, and is found most convenient for evaporations.

The balances, of which one is provided for every two students, are arranged along the outside wall, where there is greatest freedom from disturbance.

A store and book room form passage ways from the elementary to the advanced laboratory, 28 feet by 22 feet, where the fittings are very similar to those in the elementary laboratory. There are no draught hoods on the benches, the glass shelves are longer, and underneath the racks the top of the bench is perforated and gives access to channels running down to the sinks. The other fixtures consist of fume and hot closets, a combustion slab with hood and extract flues, a sink level with

the floor, and a second slab to support a muffle furnace and constant level water-oven with still and condenser.

Two doors enclosing a well ventilated space lead from the laboratory to the balance room, which is far removed from the roadway as well as from all internal traffic. The floor consists of concrete covered with wood blocks, and the slate balance slab is supported on pillars built up from the concrete foundations. All the fume cupboards and hoods are extracted by means of a system of galvanised steel pipes, coated with Dr. Angus Smith's pitch solution and connected with a powerful electrically driven exhaustor in the roof. The cross section of the pipes is carefully graduated, so that there shall be no great loss of efficiency as the distance of the air inlet from the main upcast increases. An easily accessible concrete trench, in which the main chemical ventilation-pipes, wastes, gas, water and electric-light services are carried, runs beneath the floor.

The botanical lecture-room, 27 feet by 20 feet, is entered from the end of the corridor. It serves also as a laboratory for the younger classes, and is furnished with firm benches with flat tops, 1 foot 6 inches wide, and bookshelves underneath. Chairs are used instead of benches or stools, so that the pupils may sit with greater comfort over their work. The benches are arranged at such a distance apart that the teacher can easily overlook the work of each pupil. At one end of the room is a raised platform and demonstration table of ordinary form, except that it contains a large drawer for diagrams, and the front consists of a shallow cupboard with glazed doors, useful as a museum case. The working benches are not fixed, so their position can be adjusted when the room is used for lectures.

The botanical laboratory used for microscope work is specially well lighted, and is furnished with a counter fitted under the windows. It is of such a height that the students can sit comfortably at their work. The small plant room attached is used chiefly for experiments on the physiology of plants. It is in the shape of an octagon, has a south aspect, and is airy and well lighted. Rain water from the roof is collected in a tank under the tiled floor, and can easily be pumped up over the sink. A propagating tank is fitted on the hot-water service, so that it is available throughout the year.

The heating of the entire building is by low pressure, hot-water radiators and pipes, in conjunction with a special system of ventilation in which the fresh-air supply is heated, moistened, and then delivered into the various rooms by an electrically driven fan. Outlets for vitiated air are connected to trunks in the roof discharging into the main ventilating shafts in the centre of the wing. There is also a system of automatic thermostatic regulation whereby the valves of the radiators are worked according to the temperatures, and an even temperature can be maintained without any manipulation of valves by those in charge. Electric clocks, installed by the Synchronome Co., are fitted throughout.

The science fittings and the chemical ventilation system have been carried out by Messrs. Brown & Son, London. The architect was Mr. F. W. Waller, of Gloucester.

Old Testament History for Sixth Form Boys. Rev. T. Nicklin. Part III. 1-220 pp. (Black.) 3s.—Mr. Nicklin tells us in his preface that "the Divine preparation for the Advent of our Lord seems to be the sole reason for requiring our pupils to study Hebrew history." With this many will entirely disagree; and the book itself, containing an admirable statement of the political life of the first Isaiah and of the rebuilding of the Temple, surely supplies other reasons. If books like this are used in Sixth Forms and if books like Miss Bramston's "Dawn of Revelation" are used in lower Forms, we have indeed made an advance on the time-honoured Maclear. There are admirable maps and illustrations.

COMPULSORY MANUAL TRAINING.¹

By CARL HEATH.

St. Dunstan's College, Catford.

I PROPOSE to deal with manual training from two points of view—as a compulsory subject for the school and as a subject of voluntary selection for the boy.

What is manual training, and why should it have a place, and that a compulsory one, in the curriculum of the school, and more particularly in that of the public secondary school? It is but the other day that, in talking on this very subject, the head of a public school suggested that manual training was a mere educational fad, and that it wasted time that could be better used. True, he himself took manual training for the sake of the Government grant, but in this spirit it is hardly likely to be carried on so as to be really manual training in its educational sense. Under such conditions it is much more likely to be nothing more than juvenile carpentry.

Let me give two other views. Sir James Crichton-Browne, writing in the *National Review*,² says: "Brain motor centres [that is the centres which make up this motor section of the brain] are incessantly taking part in our mental life, and mind would be as impossible without them as would the circulation of the blood without one ventricle of the heart; and besides this, they are constantly animating and controlling our muscular apparatus in all its *intelligent* applications. It is plain, then, that the highest possible functional activity of these centres is a thing to be arrived at *with a view to general mental power*, as well as with a view to muscular expertness; and, as the hand centres hold a prominent part amongst the motor-centres and are in relation with an organ which, in prehension, in touch, and in a thousand different combinations of movement, adds enormously to our intellectual resources, besides enabling us to give almost unlimited expression to our thoughts and sentiments, it is plain that the highest possible functional activity of these hand-centres is of paramount consequence, not less to mental grasp than to industrial success."

Again, Mr. John A. Hobson, the economist, in his book entitled "John Ruskin, Social Reformer," says: "Mr. Ruskin transcends the work of the specialist in educational reform in making such work an integral part of his wider social reform. In order properly to mark this connection, I must crave particular attention for the two deepest and most distinctive notes of his educational theory. First is the need of manual training for all children." And further on he says: "There are powerful reasons for recognising manual instruction as an integral part of the education of all children. Educational reformers from Xenophon to Froebel have emphasised the natural union of head and hand as the first principle of education. Not merely is dexterity of hand and eye a useful accomplishment, while the foolish and immoral contempt which gentility affects for manual work is scotched in children; the direct intellectual gain is still more important. Children who draw their intellectual pabulum from books alone, and whose experience embodies no regular and systematic experience of the nature of matter in relation to human service, the qualities of useful substances, and the tools and modes of work by which these substances can be wrought into serviceable forms, grow up to manhood and womanhood and pass on through life with an utterly defective grip on the earth on which they live and the material environment of life. This is the supreme meaning of Mr. Ruskin's insistence upon direct free contact with Nature and the practice of manual work."

¹ A paper read before the London Branch of the Incorporated Association of Assistant-masters.

² August, 1885.

In these two passages the basis upon which rests the advocacy of manual training is, I think, clearly expressed. It is not desired to take valuable time for an early industrial specialisation, to teach boys to be carpenters, boys who may be going to the university, or to the office, in a few years' time. *Carpentry is not manual training* cannot be too often said. Indeed, carpentry can be, and is often, so taught in schools as to thwart all the aims which advocates of manual training have in view. Manual training is the attempt to train certain mental and physical faculties, hitherto too much neglected, through the media of the hand and eye, and by means of a graduated scheme of handcraft in cardboard, wood, metal, or other material. A graduated scheme, with the development of these faculties as aim, for the teaching of such subjects as practical geometry, drawing, and gymnastics, in a school, cannot in any sense be said to supply an equivalent for manual training. These subjects have their own aims in view.

Some of the aims and results of manual training may now be stated.

First: it makes boys think and think continuously, the most difficult of all operations. Obviously, when once a boy has cut himself with an edge tool, and for my part I am always glad to see the first cut, he will, as one says, "think what he is doing" another time. You remember what the late Edward Thring said on this difficulty of getting boys to think: "Mind will do anything but think, mind will crawl through any number of manuals, and grovel over as many date cards as you like—aye, and bear any punishment—rather than think. Mind will wriggle out of thinking by every conceivable twist and twiddle; mind is the prince of shirks."

No subject that I know of so readily *leads* a boy into thinking and trains him in the habit. For boys see the use of *doing* things—of making, say, a drawing board, a T-square, a box, or a camp stool, and the use of learning *how* to make these things. It is a much simpler matter than seeing the use of Latin grammar, or of the propositions of Euclid. At any rate, there is an immediate interest aroused and a willingness to think, which counts to the good.

Secondly, it teaches patience and care, giving the pleasing reward of an outward, visible result of such care and patience.

Thirdly, it has its æsthetic value. I have known boys to come to despise shoddy work, after getting to know by their own experience what good work is, and learning to appreciate such good work because realising what thought and care is involved therein. They will understand sympathetically that little verse of Longfellow's—

In the elder days of art,
Builders wrought with greatest care
Each minute and unseen part,
For the gods see everywhere—

When it is applied to a badly made joint, for example.

Fourthly, it teaches accuracy and precision. You saw over the line; you pare too much, and you cannot, as *e.g.*, in drawing, rub out and remedy the defect; there is no remedy. You must not make mistakes unless you are prepared to do again. The boy becomes attentive and concentrated for fear of spoiling what he is interested in succeeding over. Often while teaching I have caught sight of a boy looking concentratedly at his work, then turning to his working drawing, considering again, and then making a firm cut, and have thought to myself, "That is just it; manual training is a good deal more than hand work." For education aims at developing faculty, as it is said, and here you have visible, concrete expression of such development.

Fifthly, it has its social value, more especially in the secondary school. Indeed, from this point of view, it is more important that it should be compulsory for the secondary than for the elementary school, for the large majority of elementary

schoolboys will perforce have contact with manual labour and know its value. In the secondary school it acts as a corrective to that stuffy notion of being a gentleman, so common in the English middle classes of the suburban type; the idea that it is finer to be something in the City than to be a skilled craftsman; that there is something contemptible in hand-work and the hand-worker. The boy who has worked in his shirt sleeves at the bench will, I fancy, never afterwards despise the mechanic at his trade. As Ruskin says: "Let him once learn to take a straight shaving off a plank, or draw a fine curve without faltering, or lay a brick in the mortar, and he has learned a multitude of other matters which no lips of man could ever teach him." Not least of these other matters is the social value of fine hand-work and the social worth of the fine hand-worker. It was some such ideas, no doubt, that led King Oscar of Sweden to have his sons taught the carpenter's trade, and, though the youth who is to marry the daughter of the Duke of Connaught will not probably have to make the kitchen furniture, he will, when he becomes king, have a better understanding of and sympathy with his industrial subjects, because of the days spent in the workshop sawing and planing.

Again, it has a levelling up value. We cannot all do Greek or mathematics successfully—at any rate, at school. Some boys develop late in what is ordinarily called brain work. They are not necessarily dolt. Their capacities are elsewhere. You place them in a workshop, and at the bench you are surprised to find they *have* brains, after all. Finding work they can do and succeed over, the old indifference disappears, and success reacts upon the rest of their school work.

Lastly, manual training develops the will. The boy fixes his mind on the accomplishment of some object. Just now, for example, I have a boy who with some suggestions has designed a small octagonal table, and is carving a simple pattern on the top. He voluntarily comes twice a week, in addition to the compulsory class in the four-years' scheme, and I am sure that the whole business of the table, with the prospect of taking it home when done, has been a factor in the development of will-power for this boy. "The will grows with courage of the deed," says Herbart.

Before turning to my second point, I should like to say that if manual training is to be universally introduced into secondary schools I hope that it will not be merely to satisfy a Government code, but that it will be done with a reasonable understanding of *why* it is done, and that the conditions will be made at least as good as in the elementary schools.

If manual training has the advantages claimed for it, if it should be made, as indeed it is now being made, a compulsory subject for the public secondary schools, if these schools are put to great expense in fitting up a workshop for instruction in woodwork, and if masters specially qualified in this work are to be added to the staffs of these schools, it may well be asked, is it reasonable to maintain that the manual training should be optional, that boys should not be compelled to take the course provided, as they are compelled to take the rest of the curriculum.

In the first place, this raises the whole question of compulsory education, and I must at once confess myself in this matter a disciple of Tolstoi. We have in Western Europe grown so accustomed of late to the idea of compulsory education that perhaps a contrary suggestion may sound a little out of date. The school still produces in the mental life that condition which Tolstoi satirically calls "l'état scolaire de l'âme." However, I must not pursue this matter in its general application. Suffice it to suggest now a few points which make for freedom in the particular subject under discussion, viz., manual training.

Manual training is a valuable weapon of reward and punishment. Most boys love to work at the bench. The school loses by a compulsory hour and a half for every boy. Freedom produces desire; compulsion, occasionally positive dislike of the work. Some boys do not need this hand-training at the particular period during which it is made compulsory. I cannot understand why at a certain point in his school course manual training should become a necessity, and at another point in time should cease to be so. Either the whole school course from the kindergarten upwards should provide for the progressive development of those motor centres of the brain already mentioned, or it should not do so. Suddenly to administer doses of woodwork, and as suddenly to cease doing so, is surely to misconceive the whole *raison d'être* of manual training. If this training cannot form an integral part of the whole school course from beginning to end, then I maintain that the time and the period during which it is most applicable must vary with the individual boy. The two-years' scheme of compulsory wood-work appears to me a method of manual training which has lost sight of the ground for its own existence within the school.

Given freedom of choice, the boy will come to manual training as he voluntarily comes to football, cricket, or lacrosse, for the keen enjoyment of the work, and the result of that work will be, as it always is, done for the love of the thing, it will be of a far higher type, and the results from a mental and moral point of view will be equally higher. So, while making manual training a compulsory subject in the school—insisting, that is, that every school should be provided with a class-room for manual training—I would give the individual boy freedom to join in this work or to do some other. The school provides a scheme of instruction for a number of years—a definite course. Good: but we are in danger of thereby sometimes crushing the original, the imaginative, the non-average boy. However good your scheme may be, I for one would rather have some freedom for individual development.

Finally, to return for a moment to my first point, if any secondary master doubts the value of manual training, let him try it. Spend a holiday in Sweden at Nääs on the Säfve Lake, or in Denmark at the Copenhagen School, or at the Leipsic College for Knabenhandarbeit, or at one of the courses in England. Many masters disbelieve in this work, but their disbelief is rarely based on personal experience. Do not imitate in this connection the famous Principal of Louvain University. You remember how the eldest son of the Vicar of Wakefield went abroad, and wanting work and hearing that there was no professor of Greek at Louvain, went to the Principal and offered his services. "The Principal," he says, "seemed at first to doubt my abilities, but of these I offered to convince him by turning a part of any Greek author he should choose into Latin." Finding me perfectly earnest in my proposal, he addressed me thus: "You see me, young man; I never learned Greek, and I don't find that I have ever missed it. I have a cap and a gown without Greek, I have had 10,000 florins a year without Greek, I eat heartily without Greek, and, in short," continued he, "as I don't know Greek, I do not believe there is any good in it."

PROF. F. S. BOAS, professor of history and English literature in Queen's College, Belfast, Mr. Cloudesley S. Brereton, Mr. B. Branford, and Mr. A. E. Briscoe, principal of the West Ham Technical Institute, have been appointed divisional inspectors to the London County Council for English literature, modern languages, sciences, and manual instruction respectfully.

TEACHERS' SALARIES IN LONDON ELEMENTARY SCHOOLS.

THE Education Committee of the London County Council has drawn up a report on teachers' salaries. The committee states that the subject is one of great importance, affecting as it does 17,000 teachers working under varying conditions and possessing all kinds of qualifications. A large number of the teachers are employed in non-provided schools. The latter the committee is advised are "not persons in the employment of the Council," and therefore the Council would be justified in treating them on different principles from those which it adopts for the staff in the London County Council schools. Such a course is, however, deemed inadvisable, and the committee considers that one scale of salaries should be laid down applicable to all teachers alike. The committee points out that the teaching profession is not so remunerative as others which require neither the intelligence nor the training required of teachers, and that, moreover, the present scale of salaries of teachers in London County Council schools compares unfavourably with those of several local education authorities in the vicinity of London. It is therefore considered that the conditions of service of these teachers should be improved, but that the object of the Council should rather be to inaugurate a process which should gradually lift the service to a higher level, and not so much to increase existing salaries.

An elaborate code of instructions as to the number of years' service without which a teacher is not eligible for a headship is given, but the committee recommends that in future the sole qualification required for an applicant for a place on their promotion list from which head teachers are selected should be five years in the London service. In the application of the new scheme to existing teachers in non-provided schools the committee suggests that each case should be taken on its merits.

As regards assistant teachers it is proposed to raise the commencing salary, the rate of increase, and the maximum salary. In the case of trained certificated teachers it is recommended that the new scale should be, for men, £100, rising by £5 (for two years) and then £7 10s. to £200 a year, subject to certain conditions on reaching £150; and for women, £90, rising by £4 to £150, subject to certain conditions on reaching £130. The present scale is, for men, £90, rising by £5 to £175; for women £80, rising by £4 to £92, and then by £3 to £140. In the case of untrained certificated teachers the same maximum salary and the same annual increments are proposed as in the case of trained certificated teachers, but the commencing salary is to be £80 (men) and £75 (women). Under the present scale the rates of salary are governed by many considerations; but, generally speaking, it may be said that the maximum salary attainable by men is £160 and £135, and by women £130.

It is proposed that the scale of salaries of head teachers should, as at present, vary according to the accommodation of the department in which he or she is engaged; but that instead of there being five grades there should only be three, and that the distinction between the salaries of head mistresses in girls' and infants' schools should be done away with. The committee suggest the gradual introduction of the system of large combined or mixed schools under one head teacher, either man or woman, with a maximum salary of £500.

HISTORY AND CURRENT EVENTS.

THE conflict between Sweden and Norway, on which we commented in April, still continues and has led to the writing of letters by eminent Scandinavians for the enlightenment of the British public on the matter. Mr. Björnsterne Björnson incidentally remarks in his contribution that "the three peoples of the north are threatened by only one common danger—Russia's desire for expansion." How persistent are these international relationships! The first partition of Poland seems part of ancient history, lying as it does beyond the Napoleonic watershed. Yet that tragedy of a State was due partly to "Russia's desire for expansion." The occasion for it arose out of a war between Russia and Turkey. It came about because the German powers, Prussia and Austria, were too weak and too mutually jealous to resist, and the King of Sweden effected an internal revolution in the year of the partition to save his country from a similar fate. And as the partition of Poland was foreseen a hundred years before its consummation, so the policy of Russia remains the same a hundred years and more afterwards. There is still a near-Eastern question because Russia's three westward neighbours find her pressing on them.

"THE policy which I have pursued is slow in its operation, and its application appears at times to produce no immediate results. The counter-policy of high State expenditure is often, to all outward appearance, more productive of immediate consequences. But the advantages secured by the former are far more solid and durable. Whoever in the future may be responsible for the government should on no account allow himself to be hurried." The words are, with the slightest necessary alterations and contractions, those of Lord Cromer's annual report on Egypt and the Sudan. But they have a world-wide significance, and embody a wisdom which is rarely found in rulers. *Festina lente* is a motto which seems too much neglected nowadays by statesmen. Is it because, with the extension of the suffrage in parliamentary countries, power has been given to those who have not yet attained the desirable wisdom? Is such a policy, therefore, possible only in the East where the one man rules, and where, therefore, *if he is wise*, the ideal of good government is alone possible?

POLITICAL science has found expression lately not only in the report of Lord Cromer, but in the despatch of our Secretary of State for the Colonies when transmitting the new constitution to the Transvaal. The whole despatch is well worth study by those who would understand that history which is past politics and that politics which is present history. Will the following brief extract help to answer the questions we have asked or suggested above? "Full self-government, as it is understood in the United Kingdom and in the self-governing Colonies, implies, and involves in practice, party government. In a country which possesses a certain degree of homogeneity based either on unity of race and language or on a long history in common, or, better still, on both, this system can work well. It does not follow that it would at once be beneficial to a country inhabited by two distinct races. . . Parties in such a country must for some time mainly coincide with the lines of races." And if this helps to justify Lord Cromer, how will it apply to what some Russians desire for their own country? There are more than two races there, to say nothing of lines of social cleavage.

YET are community of race, of religion, of language, always necessary for a working alliance? In 1814-5, Europe, assembled at Vienna, united the two Netherland countries, the Protestant United Provinces, whose heroes were the Princes of Orange-Nassau, and the Roman Catholic Spanish-Austrian provinces

that had been for over twenty years in the possession of France. The union was "unnatural," and one of the permanent results of 1830, that year of abortive revolt, was the separation of "Belgium" from "Holland." But now "for years past under the dominant influence of Leopold II. Belgium has sought a *rapprochement* with Holland. The two countries have common interests against the external foe, both in the Congo and in Eastern waters." The external foe seems to be partly Japan and partly Germany, and therefore "their relations are becoming closer, and, if circumstances permit, a customs union based upon preferential trading will cement their friendship."

ITEMS OF INTEREST.

GENERAL.

THE Rev. A. E. Hillard, headmaster of Durham School, has been appointed High Master of St. Paul's School in succession to Mr. F. W. Walker, who retires at the end of the present term after twenty-nine years' service.

THE Board of Education has now published the regulations for secondary schools for the year August 1st, 1905, to July 31st, 1906. The regulations follow in their main substance those of 1904-5. Some minor alterations have been made and a few substantial changes introduced. The object of the latter is stated in a prefatory memorandum to be to secure to schools a greater degree of elasticity in the framing and working of their organisation and curriculum. It may be noted that greater emphasis is laid on the regulation that in secondary schools receiving grants from the Board of Education an adequate proportion of the pupils must proceed to the third and fourth years of the complete course of study recognised by the Board. The prefatory memorandum lays it down that, if the bulk of the scholars drop out of the school after passing through a portion only of the complete course, it is clear that the school does not fulfil the required function of a secondary school, and is not entitled to the corresponding aid. Such a school, in fact, will cease to receive grants and to be recognised by the Board as a secondary school.

THE regulation defining the minimum time to be allotted to certain subjects in courses of study which will be approved by the Board has been altered. As regards the group including mathematics and physical science, the Board of Education is satisfied that the requirements of last year's regulations may be relaxed without risk of inefficiency. The minimum of hours has accordingly been lowered from $7\frac{1}{2}$, including not less than 3 for science, to 7, including not less than 2 for science. In other respects the minimum hours to be devoted to each section of a complete course remains as before.

ANOTHER subject rightly emphasised in the prefatory memorandum is that in ordinary circumstances the Board of Education considers that a fee of a substantial amount is desirable in the case of secondary schools, both in order to ensure the financial stability of the school and also to emphasise the fact that the education provided is of a superior kind. Paragraph 11 of the memorandum states: "Good education cannot be bought cheap; it must be paid for, whether by the scholars or by someone else for them. It would be most unfortunate if the opening of the educational ladder to children of every class were to be accompanied by any lowering of the standard of education provided. But this must inevitably be the case if funds are not available to secure the full material equipment of the school, and the provision of a teaching staff adequate in numbers and qualification. Again, it would be equally undesirable that the limited funds available for the

support of secondary schools should be wasted on scholars who, either because they enter the school insufficiently prepared, or because they leave it prematurely, do not in fact profit by the course of education which it is organised to provide."

In a recent address on headmastering to the Head Teachers' Association in London, Mr. Blair, the executive officer of the London Education Committee, said that recent studies of statistics have shown that the average age of headmasters is something over forty and of headmistresses under thirty-nine. A headmaster, he continued, is not "too old" at forty. Like most other sayings that have come to be almost proverbial, "too old at forty" has a grain of truth in it, and this is the grain of truth. A man who has spent twenty years in the same school, in the same class-room perhaps, under the same headmaster, and becomes a headmaster at forty, will certainly have experience and deserve his promotion, but may, for these very reasons, find it difficult in the majority of cases to command his staff. When such a man comes to be a headmaster he finds it an extremely difficult task to make himself adaptable to the new restrictions and conditions, and to work with his staff without friction. The best thing possible for an assistant to do is to move. It is very unwise for him to remain twenty years in the same school under the same conditions. If such a master is not able to take all that is worth taking out of a school in five years, then there is not much in him. By that time he ought to have done all and moved on, gathering fresh experience in new fields. The man who has thus had great experience, when he receives his promotion, will be able to take complete charge at once.

THE annual conference of the National Union of Teachers was this year held at Llandudno. The president for the year is Mr. T. John, of Llwynpia School, Rhondda, and he is heartily to be congratulated upon his address, remarkable as it was for the lofty ideal of the teacher's duty and privilege as the moral instructor of the children. The "religious difficulty," as it is called, was discussed in a temperate and pre-eminently helpful manner. All true education, said Mr. John, whether obtained through observation, personal influence, or instruction, is necessarily moral, and to some extent religious. Every observation made by a boy, every personal influence he comes in contact with, and every item of information he gets, may be made morally and educationally formative. The personal influence of the teacher is, of course, the permanent factor in the moral discipline of the school, but by observation, practice, or experiment in work, and in play, by physical exercises, by object lessons, and by instruction in history, geography and literature, moral education is being given in the manner if not in the matter under consideration. Sense of duty, honour, order and obedience, sincerity, uprightness, thoroughness, individuality, good temper and sympathy, are the fundamental elements of Christian character as well as of citizenship. The only power that can give this moral education is personal influence. The only effective way of teaching a virtue is to live it, and the only way we can acquire a virtue is to come under its influence. In moral education the personal influence of the teacher is everything, and is brought to bear on the life of the child through all the work and play of the school, though, of course, in some parts of school life more than in others. In conclusion, Mr. John said, "that I take to be the truth underlying all talk about 'atmosphere' in school. The good man, or the good woman, as teacher, will create that moral and religious atmosphere in proportion to his or her goodness, and his or her influence will be a Christian influence, for it will help to develop the Christian type of character and the Christian type of citizenship."

THE ninth annual conference of the Parents' National Educational Union was held in London on May 16th and following days, Lord Aberdeen presiding during the first part of the meeting and Lady Aberdeen subsequently. An excellent programme was provided, which included numerous important papers. Among these may be mentioned that in which Dr. Burge, of Winchester, dealt with the relations of home and school; that of the Rev. Lionel Ford, of Repton, on "Public Schools—the Relation of Masters to Parents and to Boys"; that of the Earl of Lytton which was entitled "Public Schools—an Application and a Criticism"; and Dr. T. Dyke Acland's address on "Sleep, in Relation to Growth, Development, and Work." During the course of his remarks, Lord Lytton said he would require of public schools:—First, that they should teach boys how to learn; and secondly, that they should give them habits of work. That is, he continued, exactly what is not done at the present day. Always excepting the few clever and persevering boys who become real scholars, the remainder leave school not only knowing very little of anything, but quite ignorant of how to learn anything more. To provide a stimulus which is lacking at the present moment a State examination should be held once a year at all schools simultaneously, an examination somewhat of the nature of the existing Universities certificate examination. He proposed that those who qualified should receive from the State a certificate of elementary education, and that such certificate should be required of every candidate for admission to any branch of the public service.

A SUMMER meeting for the study of the psychology of childhood and methods of teaching will be held at the Froebel Educational Institute, West Kensington, from July 31st to August 12th. The programme includes a demonstration class, courses in nature study, expeditions for regional survey, and an exhibition of children's work. Lectures will be given by Profs. Earl Barnes, J. J. Findlay, and Raymont, by Miss M. McMillan, Miss Ravenhill, Miss M. E. Findlay, and others. The prospectus may be had on application to Miss M. E. Findlay, 36, West-side, Wandsworth Common, S.W.

A SUMMER course to help those who are desirous of extending their knowledge of nature study is to be held at the Horticultural College, Swanley, from July 31st to August 12th. Most of the instruction will be given out of doors, rambles in the country under the guidance of experienced teachers being the chief feature. The introductory address will be given by Mr. T. S. Dymond, H.M. Inspector for Rural Education, on July 31st, on "Nature Study and the Teaching of Natural Science," and the valedictory address by Dr. S. G. Rawson, on August 11th. Application for forms of entrance and further details should be made to the principal, at the college.

WE have received [a copy of the report of the twenty-first year's work of the Association of Assistant-mistresses in Public Secondary Schools. The association has accomplished a good year's work. It has addressed memorials to the London County Council with reference to the co-option of women on the London Education Committee, to the Secretary for Scotland on the Education (Scotland) Bill, and to the Board of Education on the regulations for secondary schools, and on the proposals of the Consultative Committee. The association now numbers more than 800 members, an increase during the year of nearly 100, including members from forty new schools. The report shows that the best interests of assistant-mistresses are being watched over by the committee of the association.

MISS WALTER, H.M.I., has planned another holiday this year, which, judging from the results of her previous tours, will prove useful to women engaged in professional work. The party will start on August 1st for Switzerland, and will stay at Kandersteg and Zweisimmen, amidst the beautiful scenery of the Bernese Oberland, returning *via* Montreux (Chillon), the Lake of Geneva and Paris. The time occupied will be a fortnight, and the cost about ten guineas, inclusive of board and lodging at comfortable hotels, and second-class travelling from and back to London. Those wishing to do so can prolong their stay, as the tickets will be available for twenty-five days. Application should be made at once, as the party is limited in number and the hotels fill early. Further information may be obtained from Miss Walter, 38, Woodberry Grove, Finsbury Park, N. This tour is in no sense a commercial enterprise, it being organised merely to enable those who could not go alone to benefit by the economies which can be effected by travelling with a party.

FRENCH holiday courses by the seaside at Villerville, near Trouville, have been organised in connection with the Alliance Française, and with the approval of the Rector of the University of Caen. Full particulars may be obtained from M. L. Bascau, 143, rue Caponière, Caen (Calvados).

AN International Congress—the first of its kind—on the cultivation and extension of the French language will be held at Liège, in connection with the International Exhibition, during the second week of September. The Congress has been promoted by "L'Alliance Française." The formal proceedings will open on September 10th, and last three days, to discuss a programme grouped in four sections—viz.: literary, historical, philological, pedagogic, social and judicial. The following persons, among others, are members of the several committees now arranging the work: M. Anatole France of the French Academy; Mr. H. G. Wells and M. Maurice Maeterlinck, the English and the Belgian authors respectively; M. Paul Meyer, of the French Institute. The position and legal standing of the French-speaking population in bi-lingual countries—and especially in Belgium and Canada—is one of the subjects likely to be specially interesting, and there is good hope that Canada will be well represented when the matter is dealt with. A feature of the social side of the arrangements is also noteworthy—viz., an excursion, fixed for September 13th, into German territory, to the neighbourhood of Malmédy, geographically in Rhenish Prussia, where there are Walloon communes in which a *patois* of French origin is still spoken. Members will be allowed a reduction of 50 per cent. on the Belgian railways; they will enjoy certain privileges at the Liège Exhibition, and arrangements are in hand for securing moderate terms at hotels, &c. The membership fee is 15 francs, which is reduced to 10 francs for University lecturers and students, members of learned societies, language-teachers, and some other persons. The Secretary is M. Beck, Institut de Sociologie Solvay, parc Léopold, Brussels.

THE Craft School, Globe Road, Bethnal Green, sent a representative exhibit of work to the educational section of the St. Louis Exhibition last year; and this, together with specimens of what has been done this year, was on view for a few days in May at the offices of the National Association for the Promotion of Technical and Secondary Education. The work shown is creditable when it is considered as that of young students, and it must have held its place amongst other exhibits of its class, but it is barely worth showing in London by itself.

THE paper read by Miss Helena Powell, Principal of the Cambridge Training College, before the Cambridge District

Association of Church School Managers and Teachers in February last, has been published in pamphlet form by Messrs. Macmillan & Bowes, of Cambridge.

MESSRS. WILLIAMS AND NORGATE have published at half-a-crown another edition of Herbert Spencer's "Education," embodying the author's latest corrections, made about a year before his death.

AN article, by Mr. George W. Evans, in the *School Review* of Chicago, on "The Measurement Theorems in Geometry," shows that some of our Transatlantic cousins are still tied to an "order of propositions that has become traditional." But, whilst congratulating ourselves upon having secured greater freedom, valuable suggestions may be gained by a comparison of ideas. The article shows that the pupil need not "accept the existence of incommensurable numbers before entering upon the line that explains their origin"; and that "thoroughgoing proofs of the central facts of measurement may be given by direct attack." Mr. Evans recommends that "emphasis should be laid on the measurements of the engineer"; and shows that "limitation to decimals furnishes an introduction to the study of incommensurables." The manner in which he demonstrates some of these measurement theorems seems unnecessarily complicated. But the method is suggestive and certainly worth reading. A judicious distillation of the essential matter would be extremely valuable, as we are too apt to omit the demonstration altogether. Mr. Evans remarks that, in the case of Euclid VI. 2, "the device suggested in this article, namely, measurement by a standard unit, will not serve." But we deprecate his terrifying expedient, which would make this theorem depend upon three others; especially as it seems an attempt to evade a definition of proportion. By acknowledging that comparison of ratios involves a change of units, we believe that the spirit of his proposals (namely, decimal subdivision of the unit or units) could be applied to this theorem most simply and advantageously.

IN the *Revue Internationale de l'Enseignement*, edited by M. Picavet, is a very interesting anonymous article on "Un enseignement expérimental de la prononciation française." It describes the methods used at the University of Grenoble to teach French pronunciation to the foreign students at the holiday courses. M. Rosset has published a book of "Exercices pratiques" to supplement the oral teaching given at the courses. This teaching aims at solving one difficulty at a time—first the syllable, then the word, and lastly, the sentence. The teacher has a phonetic laboratory to help him in his work, where instruments are to be found which will show the student exactly how each sound is produced and enable him to produce it himself. By such purely scientific means it is hoped that a holiday course lasting a few weeks will enable a foreigner to pronounce French as well as if he had spent several months in France.

IN the *Chicago School Review* for April, Mr. Paul O. Kern writes an interesting article on "The Question of Translation in the Teaching of Modern Languages." He deals with the subject chiefly from what has taken place in Germany, and appears not to be aware of the history of the movement in this country, which he might study in the pages of the *Modern Language Quarterly* and elsewhere. He classifies the methods of teaching modern languages into three:—(i.) The grammatical or translation method according to which the instruction is carried on exclusively in the native language of the pupil. (ii.) The direct method, which for the most part employs the foreign language in the classroom and dispenses as much as possible with translation. (iii.) The method of

compromise, which, though advocating the use of the foreign language as the vehicle for instruction, does not reject translation. His conclusion is that translation is absolutely bad and that the method of compromise has little to recommend it. If Mr. Kern had seen the results of the direct method in French *lycees*, where it is rigorously enforced, we think he would be inclined to alter his opinions. We advise him to read Mr. Eve's masterly article on the "Teaching of Modern Languages," the separate publication of which we noticed in our last number. Mr. Eve says on this point: "Again, without translation and discussion in one's own language, the delicate shades of meaning, on the recognition of which our appreciation of the best literature so much depends, are apt to be overlooked—indeed, the thought required for scholarly treatment is scarcely compatible with the effort of thinking in another language."

SCOTTISH.

MR. JOHN D. ROSE, rector of Rothesay Academy, in the course of an address to secondary teachers on "Higher Grade Schools, their organisation and place in Scottish Education," said that the Department is at present attempting to impose a triple classification on Scottish schools, each class having a single uniform curriculum, compulsory on all its pupils, irrespective of national ideals, local needs, or the interests or abilities of the pupils. The uniform curriculum, if imposed on higher-grade schools, will unfit them for performing efficiently the work they have hitherto done in preparing pupils for the universities, and will deprive many parts of the country of the only available source for such education. The varied curriculum which has hitherto existed in such schools has provided equal educational opportunities for all classes in the community, and it will be disastrous to the best interests of the country if this character is taken away from them. The following motions were, after a lively discussion in which the present policy of the Department was strongly condemned, unanimously agreed to. (i.) That the classification of schools into three quite distinct and separate types is alien to Scottish ideals of education, and will deprive many pupils of that equal educational opportunity that has hitherto existed. (ii.) That in the interests of economy and educational efficiency all higher grade schools should be allowed as formerly to give various courses suitable to the needs of their respective districts.

THE opposition of the Convention of Burghs to the financial clauses of the Education Bill is likely, if continued, to have a serious effect upon the prospects of the measure. It was the conflict of opinion on these clauses that was chiefly responsible for the loss of last year's Bill, and, unless wiser counsels prevail, it threatens to wreck this year's also. The Government, by handing over to these authorities £100,000 that was marked for education in last year's Bill, has already gone far enough in the way of concession. To grant the full demands of these bodies would deprive the Bill of its financial stability, and render inoperative some of its most valuable provisions. The Government, therefore, has no option but to stand firmly by their financial clauses, or withdraw the Bill altogether. It is almost impossible to conceive of them doing the latter.

THE Representative Council of the Scottish Episcopal Church has empowered the committee of the Training College to negotiate for the transference of their college to the Edinburgh Committee on the lines indicated by the Scotch Education Department, but a strong feeling has been expressed in favour of insisting on the two following conditions, viz. :—(i.) That the principal and lady superintendent shall always be appointed by the representatives of the church as at present, or shall be appointed by the local committee from a short list drawn up by the church

representative. (ii.) That, in the provision to be made for the religious instruction of the students under the national system, it shall be distinctly recognised that the local authorities are to give equal facilities to every religious denomination to instruct the students belonging to that denomination.

AT a recent meeting of Scottish Unionist members a resolution was passed regretting the delay in taking the second reading of the Education Bill, and asking the Government to proceed vigorously with it in all its stages, as the passing of the Bill is most anxiously desired throughout the country. A deputation of members, consisting of Mr. J. H. Campbell, the Earl of Dalkeith, Sir Mark Stewart, Colonel Denny, and Sir C. Bine Renshaw, was appointed to bring this resolution before the Prime Minister.

THE Scottish Education Department has received from the Imperial German Government proposals for the conclusion of an arrangement for the exchange of German and English-speaking student teachers similar to that already made between this country and France. Candidates for such posts should, as a rule, hold a University degree, and either be engaged in teaching in a secondary school or be preparing themselves for such a position. Selected students will receive no remuneration, but will be boarded and lodged at the institution to which they are attached. Candidates should forward their application to the Assistant-Secretary, Scottish Education Department, Edinburgh, enclosing testimonials as to character, capacity, and teaching experience, as well as a medical certificate of health.

THE Scottish Education Bill has successfully passed the second reading. The general tone of the debate was one of hearty approval so far as the broad principles are concerned, but the divergence of opinion on matters of detail was much more pronounced than on any previous occasion. The rating proposals, the appropriation of the equivalent grant, the powers of the provincial councils, and the size of the educational areas, all revealed the most conflicting expressions of view. It is perfectly safe to affirm that, if the discussion on these and similar points is not kept within much narrower limits during the committee stage than was foreshadowed by the second-reading debate, the fate of the Bill is already sealed. Perhaps, however, the most sinister feature in the debate was the determination shown by a number of both English and Scottish members to make this Bill the occasion for raising the whole question of the feeding of school children. The magnitude of this subject and the numerous issues and interests involved demand that it should be treated in a separate Bill, if it is to be considered at all. It is to be hoped that the Scottish members will put patriotism before party considerations, and refuse to allow this long-delayed and much-needed measure of reform to be made the stalking horse for raising issues that are entirely extraneous to it.

MR. BALFOUR, in reply to a deputation of Scottish Unionist M.P.'s appointed to urge upon him the importance of providing facilities for the progress of the Education Bill, assured the members that the Government will use its best endeavours to secure the passing of the measure this Session.

IRISH.

THE recent conferring of degrees in Trinity College, Dublin, was remarkable for the extraordinary inundation of women from across the water, who came to take their B.A. and M.A., having duly qualified in the Tripos or Mods. examinations at Cambridge or Oxford. There were nearly one hundred of

them. This is a striking illustration of the market value attached to these magic letters, and one wonders whether the English universities will be at all impressed by it. As the time limit set by Trinity College expires within a year or two—and very properly, as the Board do not propose to suggest that women should go to Oxford and Cambridge for their education and come to them for the degree, but should come to them once and for all—the grievance will shortly become a very real one, and we pity the future student of Newnham or Girton trying to explain to *materfamilias* why she has not a degree when former students have been able to obtain one.

AT the recent conference of the Alexandra College Guild, Mrs. Bryant, of the North London Collegiate School, read a paper on "The Training of Teachers." Her first thesis was that the person best endowed with the teacher's natural gifts has need of much study, much practice, and much confidence as to educational experience with others before being able to do justice to pupils by the proper application of these gifts. Those who have the root of the matter in them big and strong require a careful study of the educational problems, theory, and practice. Her second thesis was that, in order to bring the education of the country up to a high level, the rank and file of the teachers stand urgently in need of a preliminary professional education. The thesis as a whole, therefore, was that all school teachers should be trained. Any scheme of training must provide for theory of education, including psychology, practice, and correlation of theory and practice. Its object is to secure in the preparatory education of a teacher a period—the final year is the best—devoted to studying the problems of a teacher's life career.

BUT, after all, few persons interested in education require at this time of day to be persuaded that teachers ought to be trained. The question is rather how training is to become an integral part of professional work. This in Ireland is, perhaps, more complicated than in other countries. An article in the *Monthly Review* for May, by an educational expert, who entitles himself "Irishman," attempts to grapple with it to some extent, and throws out some suggestions worthy of consideration. It deals both with primary and secondary education, and, after pointing out, with regard to the latter, the advantages the present Intermediate system has conferred, especially on Roman Catholic and Christian Brothers' schools, insists on the extraordinary anomaly that we still have under it the exploded principle of payment by examination results in full force. It suggests the abolition of the examinations and the establishment in their place of a thorough system of inspection, the abandonment of the present scheme of exhibitions, and some arrangement for bridging the gulf between primary and intermediate schools. The Intermediate Board "has never been an educational body." It has never "originated any change in accordance with modern educational movements, never tried to improve the teaching profession, or tested the quality rather than the quantity of the teaching in the schools." In the face of the Roman Catholic hierarchy, however, who repudiate the proposal, the time is hardly ripe for a State Department of Education, but "Irish educational needs require the attention of a special parliamentary secretary, who should be responsible for maintaining the whole educational machine in a fit order." This would certainly be an enormous advance. With the aid of the equivalent grant he could accomplish much.

THE Catholic Graduates' Association was also addressed by Mrs. Bryant on the "Future of Irish University Education and the part of Irishwomen in it." Her scheme consists of a representative self-governing democratic university, which would develop as regards religious or other opinions as the country developed and in accordance with the people's ideas. The

governing body would at first be appointed by schedule under an Act of Parliament, but she thought it would be better to allow representative bodies like the Dublin Corporation the power of appointing nominees at once. The bishops would, of course, be represented, and the visitors might consist of two bishops and two judges. It would be established in Dublin and would necessitate another university in Belfast. We should thus have three universities in Ireland. This scheme is a third alternative to two others, viz., Mr. Gwynn's, which is to establish a Catholic faculty in Trinity, making it a National University; and Father Finlay's, which is to collect £10 from each of the 1,087 parishes in Ireland as an endowment to found a university independent of the State. Mrs. Bryant was to some extent in favour of the latter scheme, as in case of failure to persuade Parliament to found a University she thought it would be compelled to endow one if already established. In the university she had in mind all advantages would be open to women, and she looked forward to the time when the sisters engaged in teaching Roman Catholic girls in convents would have passed through it and have obtained a full professional training.

WELSH.

H.M. INSPECTORS for Welsh districts have prepared proposals for submission to Welsh Education Authorities. The suggestions are that in infants' schools and classes in Welsh districts the medium of instruction shall be Welsh, though it is advisable that one lesson a day be English. Pictures and objects should be introduced for the English teaching. The whole of the teaching otherwise than for the English lesson is to be in Welsh. The intercourse between teacher and child is to be entirely in Welsh. In Standard I. it is suggested Welsh should still be the medium. In Standards II. and III. English reading and writing begin—together with the use of English in object lessons, probably recitations, and perhaps arithmetic. Altogether the English should occupy about eight hours a week. In Standards IV., V., VI., and VII. it is suggested that the school time should be divided equally between English and Welsh. In districts other than Welsh the time to be allotted to Welsh must be adequate. For instance, in Standards II. to VII. it is suggested that a fourth of the available school hours should be devoted to Welsh, the rest to English.

THE National Union of Teachers held a very successful conference at Llandudno. The President, Mr. Tom John, dealt with the Education Act of 1902, and pointed out that, though there were many defects in it, the Act embodied the great foundation principle for which the Union had contended. With regard to the Welsh revolt, he raised the question, whether a common syllabus in religious teaching is not possible? He considered the State is "irrevocably committed to a Christian civilisation, and that the Bible had been, and would be, in a deep sense the moral hand-book of our race." The Welsh local authorities, without exception, would be willing to accept "moral training based on Christian sanctions." In respect to dogmas, as a teacher he held that the most serious objection was the futility of trying to teach them to children at all.

TWO thousand people from various parts of Wales, including 700 delegates, assembled at the Bala conference, which lasted five hours. The following resolutions were passed:—(i.) That this conference reasserts its adherence to the Welsh national policy formulated at the Cardiff conference of the local education authorities of Wales and Monmouthshire, and its determination to support the action of the Merioneth education authority in resisting the injustice inflicted upon Wales by the Education Act of 1902 and the Defaulting Authorities Act

of 1904. (ii.) That, in view of the intention avowed by the Board of Education to put the Local Authorities Coercion Act into operation in Merioneth, this conference resolves that arrangements be made for the withdrawal of the children of nonconformists from sectarian schools. (iii.) That, seeing the Board of Education is taking steps to put into operation an Act of Parliament which has been passed by violent and unconstitutional means in defiance of the will of the people deliberately expressed by every means at their disposal, and which without public inquiry withdraws from the county council the power of controlling the expenditure of the rates, this conference endorses the decision of the Merionethshire education authority to take steps to relieve itself of the responsibility of administering the Education Act of 1902. (iv.) That this conference urges the Welsh education authorities not to treat as a public elementary school any non-provided school within their respective areas declared to be structurally unfit and out of repair. The remaining resolutions dealt with questions of organising resistance to the Board of Education.

THE sub-committee of the Denbighshire Education Authority has given in a report of proposals for improving school attendances. They have decided not to give "shoddy and common-place awards in the shape of cheap medals of crude design and inferior workmanship and gaudily coloured picture-cards, &c., which are too often adopted in public elementary schools." Rewards should be of good artistic design, examples of good handicraftsmanship. The committee look forward hopefully to reaching, without undue pressure, 90 per cent. This will mean, they point out, an increase in grants from the Imperial exchequer, and consequent saving to the rates of £6,800, as compared with the year before the Act of 1902 came into operation. Rewards are to have reference to good conduct, industry, regular and punctual attendance, school gardening, nature study, local history, kindness to animals, thrift, courtesy, and fairness of play.

IN one of the elementary village schools near Ruthin difficulties have arisen in connection with the dinners of the school children. Some of them have been accustomed to carry mid-day meals with them, and to adjourn from the school to eat them in the adjoining fields. The farmers complain of the trespass. Apparently a room is needed for the purpose of mid-day meals in the school. A communication to that effect was sent to the headmaster. Surely in rural schools the authorities should see that the accommodation of rooms is sufficient for all purposes, though it is to be feared that often rural schools are ill-provided with rooms.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Daudet, La Dernière Classe, &c. Edited by H. W. Preston. 32 pp. (Blackie.) 4d.—This recent addition to Blackie's "Little French Classics" contains three well-chosen stories by Daudet, which our pupils will read with interest. They have been carefully printed; the only misprint we noted is *trafter* (p. 23, l. 17). The notes are good. We congratulate the general editor on the first appearance of a word in phonetic transcript in his excellent series.

Choix de Lectures Françaises. By R. Kaiser. 150 pp. (Blackie.) 1s. 6d.—Mr. Kaiser has made an excellent selection

of prose and verse of moderate difficulty. Footnotes in French explain historical allusions. In the preface the author assures us that a complete vocabulary has been provided. On applying our usual test of looking up all the words on two pages taken at random, we found that 45 words on the one page and 17 on the other were not contained in the vocabulary.

Legouvé, Jacques l'aveugle, and Mèrimée, L'enlèvement de la redoute. Edited by W. O. Brigstocke. 32 pp. (Blackie.) 4d.—Two short stories of very different kind have been united. The latter is well known, and the former also forms suitable reading for the intermediate stage. The notes are distinctly good.

Goethe, Hermann und Dorothea. Edited by P. S. Allen. xviii. + 257 pp. (Ginn.) 3s.—We do not need this edition. There are several good English ones, and we owe the American publishers no thanks when they offer us superfluous editions of the classics. The teacher may perhaps glean a few hints from the repetitional exercises; otherwise there is nothing new in the book. We are not enthusiastic about the illustrations, which are merely pretty, and therefore hopelessly inferior to Ramberg's fine series of pictures. The notes are ordinary, the vocabulary is complete, and the introduction is American, when it is not German. We quote a few happy (?) phrases: "The material thus roughly molded [*sic*] must be motivated on every hand, brought closer to the auditor by individual enlivening." "Per- vaded by the truest touch of the warmth of life."

Classics.

The Teaching of Latin. By W. H. S. Jones. 1-79 pp. (Blackie.) 1s.—It is not often that a classicist does the service which Mr. Jones has done in this small book. He has practically told classical teachers that they and not the "dead" languages are at fault. In all our discussions this note has been avoided: for even the non-humanitarians have not quarrelled much with method. America produced some years ago a booklet with the same burden, "The Art of reading Latin"; but is it known in this country? There is little that is new in Mr. Jones's book; but it is all freshly put, and it is the work of the enthusiast. Although many people have said the same before, the concluding words of his first chapter may be quoted: "A teacher who believes in his subject is a more potent instrument than any system, however scientifically correct that system may be."

English.

Dr. Johnson. By John Dennis. Miniature Series. 85 pp. (Bell.) 1s. net.—Mr. Dennis has written an admirable small life of the Great Cham of English literature in the eighteenth century. Naturally, in a book that is intended to be almost as small as is in any sense compatible with completeness, there is nothing new; but, indeed, it would be difficult to say anything new about the subject of it, for Johnson's life, from the cradle to the grave, has been a matter of so much interest to many generations that no stone has been unturned which might assist in developing our knowledge of that singular and rather forbidding yet overpowering personality. The great merit of Mr. Dennis's book is that he retells an oft told story in such a clear and fascinating way that it is difficult to lay the volume down till the end is reached. The section dealing with Johnson's "works" is full of good criticism; and we venture to think also that another section devoted to "the Lives of the Poets" will do much to send readers to the pages of that work, so little known as it is to many people who pride themselves, nevertheless, on knowing a good deal about Dr. Johnson.

Browning. By Sir F. T. Marzials. (Miniature Series.) 100 pp. (Bell.) 1s. net.—Most people are aware that Browning literature is already assuming rather formidable dimensions, and presents special difficulties to the student of this by no means easy poet. To anybody labouring under this conviction this little volume may be safely commended, both as supplying all that is wanted in an introductory sketch to one who is taking up this subject, and also as condensing the existing literature upon Browning into such a compass that even advanced students may find all their knowledge, or, at least, all their reading, aptly summarised. The story of Browning's life is told with charming sympathy for every salient feature of it; and the writer discloses a keen and acute appreciation of the character of this riddle among poets. "The Ring and the Book" naturally gets a whole chapter to itself, here as everywhere else; but the critical chapters dealing with Browning's style and artistry contain a lucid presentation of much valuable thought on these much discussed subjects. Emphatically this volume is to be commended, despite its small size, as a valuable contribution to popular knowledge of this poet.

(1) *Plutarch's Life of Alexander.* vii. + 120 pp. (2) *Macaulay's Second Chapter.* vi. + 136 pp. (Blackie.) 8d. each.—Dr. Rouse has edited these texts by merely affixing an introduction, and looking to the supply of a well printed text. The general appearance of these booklets is attractive, and they step, as will be seen by their titles, somewhat out of the beaten track in educational editions, and they are also exceedingly cheap. They may be commended without reserve to the attention of teachers.

Recitations for Infant Schools. By Margaret Riach. 160 pp. (Blackie.) 8d.—This is a useful collection of very juvenile verse, and only needs to be known to be prized. If we draw attention to the fact that the five books which are here printed in one cover might with advantage have been condensed as one continuous collection, instead of being divided into five sections of thirty-two pages each, we make the remark in no captious spirit, but merely in the interest of simplicity of arrangement and numbering of pages. This point is as important to children as it is to a reviewer.

Borrow's Gipsy Stories. vii. + 112 pp. *Borrow's Antonio and Benedict.* One vol. iv. + 120 pp. *Hawthorne's Tanglewood Tales.* v. + 120 pp. Edited by Dr. W. H. D. Rouse. (Blackie.) 8d. each.—The attempt to seek texts in unexpected quarters is one which strikes us as in the main commendable, and, as Dr. Rouse has so far managed it in this series, it is certainly a success. Hawthorne's "Tanglewood Tales," therefore, may be commended in this edition (which is unencumbered by any notes), and that for two reasons: it is not only a new departure, but it is a convenient way of instilling the legendary lore of Greece into children's minds; an educational process which, if begun young, may assist in Hellenising the English mind imperceptibly, yet powerfully. The two little volumes noted above, under the name of George Borrow, are compiled from "The Bible in Spain," and this unquestionable classic is thus introduced in a convenient way to youthful readers. Borrow, of course, needs a glossary, and one is appended to each text. Otherwise the editorial labour is confined to a brief biographical introduction in every case.

Shakespeare's King Henry the Eighth. xi. + 180 pp. (Blackie.) 1s.—It is pleasant to be reminded by this volume that the "Picture Shakespeare" series is not yet exhausted, for it has had consistently certain merits of its own not at all

inconsiderable. These are all found in this special case, and in addition we ought to praise the substantial addition to its bulk made by the excellent and careful notes. An appendix dealing with the date, history, and authorship of this play is well worth attention; and the critical appreciation, which is reasonably well done, comes last of all, a piece of editorial modesty which we value.

Bacon's Essays. With an Introduction by Frederic Harrison. *Silex Scintillans.* By Henry Vaughan, Silurist. With an Introduction by W. A. Lewis Bettany. (Blackie's Red Letter Library.) Cloth, gilt top, 1s. 6d. net.; limp leather, gilt top, 2s. 6d. net.—These beautiful editions of well-known pieces of literature deserve and should secure an immediate popularity. The series appears to include thirty-four standard works, and we can imagine no more desirable addition to a teacher's library. The pleasure of handling the volumes will enhance the joy of reading them, or of re-reading them, as the case may be.

Shakespeare's King Richard III. Edited by E. K. Chambers. (Blackie's Red Letter Shakespeare.) Cloth, 1s. net.; leather, 1s. 6d. net.—The publishers say that this edition aims at being at once scholarly, dainty, and popular. The aim has been completely fulfilled. We note that red ink is employed for the names of the characters, and that these are always printed in full. Mr. Chambers supplies a few brief footnotes, and a short appreciation of the plays remarkable for its suggestiveness.

The Man born to be King. By William Morris. xx. + 76 pp. (Longmans.) 1s. 4a.—This edition of a story from Morris's "Earthly Paradise" is here issued anonymously, with a clear text and an almost startlingly brilliant cover. Morris is not yet much known in school work, but this volume will aid in recommending him to attention in educational quarters. The editorial labour has been confined to the writing of a fairly good introduction and the making of brief (and few) notes. The book is, nevertheless, an interesting experiment.

The Age of Fable. By Thomas Bulfinch. xiii. + 460 pp. (Dean.) 2s. 6d. net.—This book emphatically deserves the credit of being a singularly useful volume; it also is so interesting and well written that either it would serve excellently as a reading book or as a prize. In a sub-title Mr. Bulfinch describes it as "the Beauties of Mythology," and in his preface he insists on the value of mythological knowledge, as "mythology is," he says, "the handmaid of literature, and literature is one of the best allies of virtue and promoters of happiness." It is certainly true that without some knowledge of mythology it is impossible to read even our own English literature with true appreciation, and this volume supplies a much better method of gaining acquaintance with classic fables than that usually adopted in annotated editions. Naturally, Greek and Roman legends supply most of the matter, but Eastern and Northern mythologies are also drawn upon, and even the Druids come in for notice; so the book may be said to be complete in its purview of the subject. The treatment is interesting throughout, and the book, notwithstanding its serious aim, is equally full of amusement and instruction.

The Age of Chivalry. By Thomas Bulfinch. viii. + 329 pp. (Dean.) 2s. 6d. net.—The author of this volume continues the useful labour in these pages which we have had occasion previously to praise. He leaves classical mythology for the age which witnessed the historic birth of the several States which make up modern Europe, and deals for the most part with King Arthur and his Knights, reserving for the last one hundred and twenty pages the stories of the Mabinogion.

These are all handled in the same felicitous way as in the former volumes, and he has presented us with pictures of mediæval manners which have high literary merit. This selection of all that is salient and striking in the literature of early European romance ought to be given without reserve to young people, either as a reading book or as a presentation volume. Not only will they by its careful use find themselves the possessors of a key to much modern poetry, but it is calculated to cultivate their imagination in healthy directions.

(1) *Milton's Samson Agonistes*, 84 pp.; (2) *Goldsmith's Traveller and Retaliation*, 36 pp.; (3) *Macaulay's Lays of Ancient Rome*, 107 pp.; (4) *Gray's Elegy*, 32 pp.; *Coleridge's Ancient Mariner*, 32 pp. (Horace Marshall.) 4d. each.—In this series of "Carmelite Classics" the editor, Mr. Frazer, has been happily successful in his attempt to reduce the notes to a minimum, which he has set up as an ideal; and it may be also conceded that a like success attends his attempt to make them interesting. The most important feature of each booklet, however, is a series of questions on the text, which is in every case admirably managed, and ought to be equally serviceable to pupil and to teacher. Another useful feature is the bibliography given in each case, which supplies a guide for further and deeper reading, though this presumably applies to the teacher also, since the pupil's interests have previously been considered in quite another light. Some notes on metre are also printed; not always sufficiently useful to make a teacher study this obscure subject; and, unfortunately, quite out of the range of the children for whom the series is designed.

Hakluyt's English Voyages. By E. E. Speight. xiv. + 303 pp. (Horace Marshall.) 2s. 6d.—Mr. Speight rarely fails to conceive original ideas when he edits a school-book, and to bring old Hakluyt to the light of day in this form is a brilliant attempt to revive an old classic and also give interest to the study of geography at one and the same time. No one, as Sir Clements Markham remarks in a short preface which the editor persuaded him to write for this volume, ever told the story of sea voyages of discovery quite so well as Hakluyt; and although these pages naturally comprise only a selection, the selection has been carefully made. We would, for instance, call attention at once to the chapter "Of the Island Japan in 1565," as showing how up to date the interest of this volume is. Mr. Speight's introductory remarks are well worth reading, and the notes are splendid. A useful biography is appended, and there is a valuable glossary. There are a number of illustrations well in keeping with the spirit of the text. A book to be commended as a reading book and as a good school edition of a classic.

Milton's Lycidas and Sonnets. By W. L. Frujen. 32 pp. (Horace Marshall.) 3d.—This is another little booklet in the Carmelite classics, reproducing all the familiar features of this praiseworthy miniature edition.

(1) *Coleridge's Rime of the Ancient Mariner*, 40 pp.; (2) *Gray's Elegy*, 23 pp. (Dent.) 3d. each.—These are wonderfully well done when the exceedingly small compass of the space at command in each case is taken into consideration. Nothing but praise can be given to the introduction and notes. These, in both instances, fit in with the ideal of a very small edition, which, nevertheless, manages to be sufficiently comprehensive, scholarly and artistic, to be of real educational value. Both booklets are a distinct addition to the series in which they appear.

Tales and Stories from the Faëry Queene. By N. G. Royde Smith. 141 pp. (Dent.) 1s. net.—This makes a delightful

gift or reading book. The editor has dealt faithfully with the text of Spenser's poem, and the way in which he turns Spenser's poetry into episodes and prose is admirable. A portrait of the poet included as a frontispiece is worth attention. The elegance of the volume is not its least charm, though it is only what we are now accustomed to expect from Aldine House.

Southey's Life of Nelson. xvii. + 363 pp. *Longfellow's Hiawatha*. xi. × 193 pp. *Macaulay's Lays of Ancient Rome*. 194 pp. (Dent.) 1s. each.—These little but useful and elegant editions all form part of Messrs. Dent's educational "Temple" series. In the case of the first, Southey is practically left to do his own editing and introduction to his present public; we have another bulky text and only a few serviceable notes. Mr. Henry Williams has undertaken the presentation of Longfellow's poem, and supplied a brief introductory sketch, which by way of conclusion deals in an interesting fashion with the difference between the authentic Hiawatha and the poetic creation, showing that this hero in actual life performed the political service of bringing about the league between the five (afterwards the six) nations which was so important in the conflict of England with France for North America, to which Mr. Bradley has devoted his recent volume. Mr. Oliphant Smeaton supplies a good but not striking introduction to Macaulay's verse, in which, however, a section in ballad poetry is worth consideration. Frontispieces alone supply the customary artistic element in these editions.

The Adventures of Odysseus. By F. S. Murvin, R. G. Major, and F. M. Stawell. xii. + 195 pp. (Dent.) 1s.—This version of the story of Ulysses, told in lucid English prose, makes good reading. A brief introduction tells of the cause and origin of the Trojan war, and presents a theory of the Homeric poems which will upset nobody. The text itself is in a short form, merely the outline of the story of the Odyssey. The book is adorned with remarkably beautiful illustrations, in most of which the Greek spirit of beauty is amply displayed. Altogether commendable whether as a class book or for private reading.

Shakespeare's Two Gentlemen of Verona. By K. Deighton. xviii. + 219 pp. (Macmillan.) 1s. 9d.—It is by no means a poor addition that this volume makes to Messrs. Macmillan's well known series; and this delightful comedy has, perhaps, never before enjoyed the advantage of a better edition for educational purposes. The introduction is not a lengthy piece of work, but it is clearly and lucidly done, and its critical spirit is unmistakable yet well balanced. The notes are extremely good, as is the usual case in the volumes of this series—scholarly, and yet condensed in an admirable degree. Naturally, this early comedy of Shakespeare's does not lend itself to lengthy treatment, even by the most diligent and learned of editors. It is to the credit of the present one, therefore, to have presented the cream of criticism upon it in a form which makes the study of this play delightful.

Fanny Burney. By Austin Dobson. (English Men of Letters.) (Macmillan.) 2s.—No brighter or happier volume has hitherto appeared in this world-renowned series of literary monographs than the present sketch of the career and literary triumphs of Fanny Burney. In saying this it is impossible, perhaps, to forget Mr. Chesterton's very breezy volume about Browning; but that book failed to be altogether convincing, whereas this appears to be absolutely well-balanced criticism proceeding from an author who knows the epoch with which he deals in every possible relation and aspect of it. Indeed, to have chosen anybody except Mr. Austin Dobson to write upon one of the most unique literary figures of the eighteenth century

would have been something of an error of judgment, as can be clearly seen when this volume is passed under careful review. Much of the biographical matter is, of course, common property, only here it is so pleasantly detailed that it has all the charm of novelty, and the picture of Fanny's life at Court is extremely well done. If she was not in her Court capacity an entire success, she was, nevertheless, a decided ornament of King George III.'s household, and even that monarch appreciated her services sufficiently to perceive that she had sacrificed some of her literary prospects through her devotion to the Royal service. Her life as Mme. D'Arblay is a portion of this volume which many readers will thoroughly enjoy; and although that stay in France, which was planned for eighteen months and really lasted ten years, is told in a few pages near the end of the volume, it is an exceedingly interesting part of it. Of course, there is much of Dr. Johnson in the volume, but no mean service has been done to literary portraiture by Mr. Austin Dobson in the sketch he has given of Fanny Burney's father, Dr. Charles Burney; and among his literary judgments not the least valuable is his opinion that "the 'Diary' of Mme. D'Arblay deserves to rank with the great diaries of literature. It is nothing that it is egotistical, for egotism is of its essence; it is nothing that it is minute, its minuteness enforces the impression. It gives us a gallery of portraits which speak and move, and a picture of society which we recognise as substantially true to life."

Thomas Moore. By Stephen Gwynn. 203 pp. (English Men of Letters.) (Macmillan.) 2s.—Moore has long deserved a place in this series of monographs, and he has now found a sympathetic biographer and a careful critic in Mr. Stephen Gwynn, who has told the story of his life and works in these pages in a style which will perhaps send a good many people to the bookshops to procure copies of his poems, which in sad truth have seen of late some danger of being forgotten. If this were the place for a formal review of this book it would be no small pleasure to follow the author through these pages; but as it is not, it must suffice to do little more than recommend to the general reader this account of the singular career of perhaps the most characteristic of Irish poets who have written in English, whose singular charm and happy fortune made him at an early age, grocer's son though he was, an intimate at Holland House, at Bowood with the Lord Lansdowne of his day, and admitted him to the friendship, which was afterwards interrupted for political reasons, with that Prince Regent of Georgian history, the unspeakable George, afterwards "the Fourth" of his line. One of the charms of the story here disclosed is Moore's happy domestic life with the little sixteen-year-old actress whom he married in 1810, when Moore just precisely doubled her age; but not less interesting is the sturdy independence of his character as delineated by Mr. Gwynn, who notes that he would borrow money from nobody except Samuel Rogers (and that only twice), although with a steady belief in his own powers "he constantly anticipated by long intervals all his earnings from his publishers." Moreover, it is quite clear that in his publishers he was fortunate indeed; as fortunate as in his many friends, and in that large public which, when any opportunity of honouring him offered, made known its sense of indebtedness. The story of Moore's political relations is also worth attention in these pages; and the appreciation of his life and work, which comes last in order, ought to be diligently conned. If we quote Mr. Gwynn's most trenchant sentence, by way of conclusion, it will serve to show how carefully he has studied his subject: "It is, I think, mainly as an artist in metre that Moore still holds an importance in the history of English poetry, and anyone . . . will see how individual and original were his achievements. But

the admirable qualities in his verse by which he impressed his contemporaries were rather those of lightness and swiftness; its sweetness, of which much was made, is a good deal less admirable."

Scott's Woodstock. xxxv. + 747 pp. (Macmillan.) 2s. 6d.—This is another of the anonymous volumes of which we have recently remarked that we do not entirely comprehend why the editor's name is withheld from even a crooked and perverse generation. It has been well edited, brief as the editorial matter is. The notes are deserving of high praise.

Scott's Ivanhoe. xlvi. + 744 pp. (Macmillan.) 2s. 6d.—As a reading book Scott's celebrated novel makes up most excellently in this form; and the editor's introduction is a creditable piece of work. The notes are excellent, numerous, condensed, and conducive to an easy understanding of all points springing out of Scott's matter and manner in story telling.

English Past and Present. By Archbishop Trench. Edited by A. Smythe Palmer. vi. + 262 pp. (Routledge.) 2s. 6d.—Dr. Smythe Palmer continues his useful task of editing the works of Dr. Trench in a handy and cheap form. It must be said that this edition has hitherto been a brilliant success, and this particular volume is deserving of high praise, because the editorial labour expended upon it in the matter of footnotes and corrections has been very large. Dr. Palmer's remark, that even the mistakes of a learned man are instructive to those who follow in his steps, is one which many editors might usefully lay to heart, and if they could be induced to follow his plan and point such mistakes out, instead of ignoring or expunging them, a great deal of editorial labour would be more valuable than it is. Dr. Palmer treats the Archbishop's work as a classic, and his notes are the record of fifty years' advance in etymological research. It is a great pleasure to commend this volume to all students and teachers of English.

(1) *The Shadows and Little Daylight*, 86 pp; (2) *The Day Boy and the Night Girl*, 75 pp; (3) *Cross Purposes and the Curasoyan*, 104 pp. (Fifield.) Each 6d. net.—These three booklets continue Mr. Fifield's republication of Dr. George MacDonald's fairy tales, under the editorship of Mr. Greville MacDonald. The idea is distinctly a happy one, for nothing better than fairy stories can ever be given to children at a certain stage of their infantile development; and really good fairy stories, outside two or three foreign classics, it is somewhat difficult to find. These are capitally illustrated, and are in a handy form. The only objection is, perhaps, to the paper covers; unless it might also be that a volume containing the whole of them would be acceptable, though, doubtless, these instalments can be made to serve a useful purpose. Perhaps this hint may lead to a reissue in a complete form and at a cheap price. Scholars interested in fairy stories would add such a compact volume to their libraries more readily than these booklets.

The Works of Arthur Clement Hilton. Together with his Life and Letters. vi. + 219 pp. (Macmillan and Bowes.) 5s.—This volume is the outcome of some appreciative words written by Mr. G. W. E. Russell; and it may be said at once that Sir Robert Edgcumbe has done a real, if an unobtrusive, service to literature in putting together forty-six of Hilton's letters, with his verse, and a brief memoir of what was a very short life. It is easy to follow him through his career at Marlborough, Cambridge, Wells, and Sandwich in these pages, and to gain a most pleasing impression of an engaging personality. Hilton as a letter writer was undeniably clever, and when we turn from his prose to his collected verse the impression of his genius is much

strengthened. Hilton, but for this fortunate biography, would have remained almost unknown to many people, except for the vogue of "The Light Green" among university men. It is now possible to gain a better knowledge of him, and to see with what ample grounds those who knew him well regretted the dreary fate which closed a three-years' curacy at Sandwich by a premature death at the age of twenty-six. The verse alone has established Hilton's position among English humorists.

English Language Notes. First Year. By Alice J. Robinson. 48 pp. 6d.—This compilation of notes is the work of a practical teacher who has designed it to supply a want which, doubtless, other teachers feel as well as she does, namely, some plan of simplifying the dictation of notes and home-work after a lesson. All the sentences given here are taken from familiar stories and poems, and they are all suitable for analysis. It is also a valuable feature of this collection that the pupils who are treated by this method must make their own examples, since the notes themselves are intended merely as reminders of the lesson. The forty lessons into which the book is divided are all well worthy of consideration, and ought to prove of material assistance to many teachers of English. A form for analysis given at the end may be praised for its extreme clearness, combined with compression and condensation, two characteristics which do not always appear in schemes of this kind.

(1) *The Gospel of Saint Matthew*, 147 pp.; (2) *The Gospel of Saint John*, xxix. + 260 pp. By James Wilson Bright. (Heath.)—These two volumes are included in the Belles Lettres series to which we have previously referred in terms of high commendation. The elegance and scholarship of preceding volumes are here maintained at the same high level. In each case the text is in West Saxon, and has been edited from existing manuscripts with great care. The volume containing St. Matthew's Gospel presents the text only, but the larger volume containing St. John's Gospel is elaborately provided with a learned introduction, with notes, and with a copious and valuable glossary. But the introduction in question deals with a general view of all the questions affecting the version under review; the notes are often applicable to both texts; and the glossary likewise can be made serviceable to students of both gospels. There is no great reason, therefore, for finding fault with the arrangement to which Dr. Bright has felt himself compelled to conform through considerations of space and expense.

Juliana. By Dr. W. Strunk. xlv. + 133 pp. (Heath.)—This is another of the learned and elegant editions included in Messrs. Heath's "Belles Lettres" series. To many who are not deep students of early English texts it will be necessary information to learn that the title really refers to a poem by Cynewulf, which that poet derived from a history of St. Juliana's life originally told in Latin prose. This poem found its way into the renowned "Exeter Book" of Leofric, and its interest is certainly sufficient to carry a student willingly through the pages of Dr. Strunk's edition. This is elaborately done, and covers a wide field of scholarly research. We desire especially to call the attention of students of Old English to the biography of this subject.

Webster's White Devil and the Duchess of Malfy. By Martin W. Sampson. xlv. + 422 pp. (Heath.)—For the most part, these two plays (among the most significant, as a matter of fact, produced in early seventeenth century literature) are known only to scholars and students of the English drama. Here we have them in an elegant educational edition. Mr. Sampson has prepared this volume with a careful but short life of Webster. An "Introduction" follows dealing critically and ably with Webster's work as a play-

wright. It ought to be read with care, for it contains many fruitful ideas. The notes are of the same scholarly kind to which this admirable Belles Lettres series have now accustomed us.

The Meditations of Marcus Aurelius. (Standard Library.) vii. + 110 pp. (Methuen.) Cloth, 1s.—This is a new serial venture, starting excellently with a translation of this classic of stoicism by Mr. R. Graves, and issued with a preface by the general editor, Mr. Sidney Lee. Marcus Aurelius is going about the world just now in a multitude of commendable editions; but this is as good as any of them for the purpose of the general reader, and as cheap also.

Gibbon's Decline and Fall. Vol. I. xxix. + 441 pp. (Methuen.) 1s.—This is a paper-covered double volume in Messrs. Methuen's Standard Library. Mr. Sidney Lee supplies a good preface; the text has been revised by Prof. Bury, who has also supplemented Gibbon's notes by many of his own. The republication of this great classic in this form brings it within reach of everybody, and it ought to be advertised by every means, and praised too.

Stories of King Arthur and his Knights. By W. Waldo Cutler. xix. + 236 pp. (Harrup.) 1s. 6d. net.—The want of some reading book which should present, in an attractive and simple yet purely literary form, some of the great legendary stories of the world is often felt by teachers; and in the case of Malory's immortal work this need is met in a capital style by Mr. Cutler's volume. The main interest of the book lies in the presentation of Malory's stories in a quite modern way, while still preserving their essential beauty, and so feeding the youthful imagination with some of the most attractive material in the world upon which it can possibly be nourished. Mr. Cutler's volume ought to be welcomed by teachers; it is certain to be warmly appreciated by children at school.

Sesame and Lilies. By John Ruskin. xi. + 180 pp. (George Allen.) 1s. net.—These inspiring lectures are too well known to require comment. A multitude of readers will be glad to be able to obtain them at a small cost in this convenient and nicely produced pocket edition.

Reading Books.—One cannot say very much that is new about new books. They are so good and they are so many. "Readers" of all kinds have improved in looks of late by leaps and bounds. In Macmillan's *New Globe Readers* (5d., 6d., 8d.), the principle of arrangement of vowel sounds is followed, and this should save time, both in the reading and spelling lessons. The series gives ample opportunities for interesting little children, and the illustrations are admirable; indeed, in Longmans' *Introductory Reader* (8d.), and in Bell's *York Reader*, Book II. (10d.), they are so good that the price is a marvel. The series which follows the "Introductory Reader" consists of six books varying in price from 10d. to 1s. 9d.: they go by the name of the *British Empire Readers*. The letterpress is admirably chosen; one can see that many books have been turned over, and the grading is good. No one who likes the "reader," i.e., the collection of short pieces, prose and verse, can do better than use such books as these. The range of reading is immense; and, properly treated, the selections should send children on to the reading of whole books. In *The World's Childhood* (Syngé, 10d.) Messrs. Blackwood make one more attempt to bring Greek myths into the child's life. The book is simple, and the look of it is Greek. It is strange that with all these readers in the market there should be young men and women who profess never to have even heard of Alceste or of Helen or of Eurydice. Anything that tends to spread the knowledge of their immortal stories should be welcomed.

The A. L. Bright Story Readers. (Arnold: Leeds.) Nos. 42, 52, 60. 4d. each.—We have already commented on this admirable series. The shape is good, the books open easily, the print is very clear, and the readers are continuous. Those before us are "Robinson Crusoe," "Swiss Family Robinson" and "Brave Tales from Froissart." We should like to know if sixty-two of these classics have been published; the list at the back of the book is incomplete.

History.

A History of Modern England. By H. Paul. Vol. III. vi. + 454 pp. (Macmillan.) 8s. 6d. net.—The third volume of Mr. Paul's history deals with the years 1865-1876, and thus may be described as the story of the rise, progress, and fall of the great Gladstone ministry. The volume is of the same character as the previous two (which were noticed in THE SCHOOL WORLD for May, 1904). It is good journalistic history, written mainly from the point of view from which, to quote the author, "importance may be gauged by the standard of parliamentary interest" (p. 143). Besides the ordinary political history, which wanders into foreign matters whenever they were of great interest to Englishmen at the time, there are excellent chapters on "theology and literature" and on "intellectual and social progress." We think the author is mistaken (p. 196) as to the numbering of our Acts of Uniformity. It is misleading to be told of the cession of Alsace and Lorraine in 1871 (p. 259) and of Miss Garrett being at the head of the poll in 1870 (p. 223). The Birmingham nonconformists will be astonished to hear that Robert Dale was a Wesleyan (p. 217). And Mr. Paul's own cynicism (p. 245) as to the "cause" of the Franco-German War may be answered by a reference to his own comments on p. 250. But these are minor errors. The volumes should find a place on the shelves of the school library, and our elder scholars be encouraged to read of that which, just because it is in the memory of their fathers, fails to be told them.

Chatham. By Frederic Harrison. 239 pp. (Macmillan.) 2s. 6d.—Twelve years ago, Prof. Tout's "Edward I." appeared as the eleventh in the series of "Twelve English Statesmen," which began with four biographies in 1888. And now, after long expectation that Mr. John Morley would write the twelfth on Chatham, Mr. Frederic Harrison supplies the deficiency and completes the series. We cannot say that it has been a labour of love. The author is well known as an opponent of much of our modern Imperialism. Chatham's fame depends mainly on the four and a quarter years of the Pitt-Newcastle ministry which conducted the Seven Years' War and coloured much of the map red. Mr. Harrison, speaking of Pitt's schemes in 1761, is doubtful "whether the result would have promoted the cause of civilisation, or even the ultimate good of our own country," and says, "the morality of such a national policy cannot now be defended or excused." Of the two other periods of Chatham's career, the twenty-two years during which he struggled for power, and the seventeen during which he was all but always in opposition, Mr. Harrison is of two minds. He admires the fiery tempestuousness of the denunciations of Walpole and of "Hanoverian" measures, but sees clearly that they were but partisan manoeuvres. He approves of Chatham's views on the British constitution and on the American quarrel as against George III. and the House of Commons, but also admits the impracticability of his proposals. What could be done by the workaday world with a visionary who was capable only of intermittent criticism, and whose health prevented his taking the only position he would accept? There are some

curious and puzzling misprints in the book, and Mr. Harrison, relying as he apparently does, mainly on Horace Walpole, Macaulay, and Carlyle, does not make nearly enough of foreign policy. He thinks Walpole was ignorant of the First Family Compact. He ignores the international aspect of the crises of 1744 and 1746. He takes the opposition view of Carteret. He speaks of a "gigantic confederacy of five Powers" attempting to crush Prussia in the Seven Years' War. He omits the refusal to send a fleet into the Baltic to defend Frederick from Russia. He thinks that in 1762 Frederick had still to fight Russia as well as Austria. And while he knows that Chatham's temporary recovery of health in 1769 "startled the town," he omits to mention its effect on the policy of Choiseul. In home politics he takes the traditional view of George III., and all but ignores the good side of his struggle against the Whig oligarchy. He has no doubt as to the folly of the British policy in America. But with all its defects the book is worth reading. There are many extracts from Chatham's speeches as reported. Chatham's relationship with the "Cousinhood" and its effects on personal politics are clearly told. To those who already know the period fairly well, the book will prove of much service.

A Biographical History Reader. By B. A. Lees. iii. + 348 pp. (Black.) 2s. 6d.—Four "lives" have been selected from each of the four volumes, entitled "History in Biography," previously noticed in these columns. Four others are added from the eighteenth century. There are, as before, illustrations in plenty, and a summary of events, together with the poem that Canning wrote in honour of the Younger Pitt with the refrain, "the pilot that weathered the storm." We can heartily recommend the volume, but hesitate to think it is quite within the understanding of pupils in "primary schools."

Stories from the Northern Sagas. By A. F. Major and E. E. Speight. xx. + 284 pp. (Horace Marshall.) 2s. 6d. A second edition, revised and enlarged, with a preface by Prof. York Powell, and illustrations drawn on the scene of the stories, by Messrs. Collingwood and Nance. The work is excellently done, and for those who think our young people should know something, at almost first hand, of the doings of these wild times, with their murders, treacheries, and ghost stories, we can recommend the book. But we miss a word of wise caution as to the morality. The editors seem to think more of the style than the matter.

Selections from Prescott's History of the Conquest of Mexico. By A. S. Lamprey. 148 pp. (Horace Marshall.) 1s. 3d. *Selections from Prescott's History of the Conquest of Peru.* By A. S. Lamprey. 131 pp. (Horace Marshall.) 1s. 3d.—We once told a boy of twelve to begin reading Prescott's Peru. We found no need to insist on his continuing it. It is therefore, perhaps, a pity to make "selections" from such a delightful work, lest our pupils should think the rest is "dry." But we are thankful for the illustrations in these two books. There is nothing in addition to Prescott, except those and a page of preface.

The Student's American History. By D. H. Montgomery. xi. + 612 + lvii. pp. (Ginn.)—Another excellent manual of American history from the other side of the Atlantic, supplied with biographies, illustrations (especially facsimiles of letters, etc.), and an index. A hundred and seventy-six pages disposing of all before 1763, there is abundant leisure to tell the story that has followed. The appendix contains, among other things, tables of States, of Presidents, and of population and representation.

Geography.

Highways and Byways in Derbyshire. By J. B. Field. With illustrations by Nellie Erichsen. xvii. + 500 pp. (Macmillan.) 6s.—From the point of view of the school, the value of this book, and of others in the series to which it belongs, lies in the interest they can create and foster in local history, geography, and literature. Scarcely a page of the present volume but what contains a narrative of historical or traditional interest, or an account of the literary associations of the places visited by the author. The area described is the Derbyshire of the tourist, and the tracks are chiefly those of the principal rivers. The route goes along the Trent for a few miles, follows the Dove to Buxton, then travels with the Derwent down to Ambergate, and meanders about the Wye and the uplands and valleys which intervene between Wye and Dove and Wye and Derwent. Maps and pictures brighten the pages, and enable the stranger to accompany the author in his wanderings and enjoy the scenes and structures explored. Repton School is referred to as "the only school of any celebrity in the entire county." We find no mention of Derby School, though it is one of the oldest in England, and therefore worthy of notice in a volume so rich in historical information as this one.

Mathematics.

A Manual of Quaternions. By Charles Jasper Joly. xviii. + 320 pp. (Macmillan.) 10s. net.—For students who have a fair knowledge of mathematics it would be hard to find a simpler or more suggestive introduction to quaternions than this manual. It is free from the trivialities that too often occur in elementary books on the subject, but is at the same time lucid and thorough in its treatment. In the first two chapters, extending to twenty-two pages, the "grammar of the subject" (to adopt the author's phraseology) is developed with singular clearness and definiteness, and this remarkably compact statement of the fundamental laws and operations is followed by an excellent chapter on "Formulae and Interpretations depending on Products of Vectors." The reader is then ready to undertake the study of the applications to geometry, dynamics, electromagnetic theory, &c.: the selection of the material for the various chapters is such as to satisfy not only the pure mathematician, but also the reader whose main interests lie in the region of applied mathematics. The treatment presents novel features in nearly every chapter, but the novelty is not associated with artificiality. As a sound and workable introduction to quaternions, sufficiently extensive for many of the most important uses of the subject, this manual will at once take the leading place.

Introductory Mathematics. By R. B. Morgan. vi. + 151 pp. (Blackie.) 2s. *Introductory Mathematics. Answers.* By R. B. Morgan. 16 pp. (Blackie.)—The course laid down in this book includes the elements of algebra up to the solution of problems leading to simultaneous equations of the first degree, the elements of practical geometry, plane and solid, and graphical work. Though the treatment cannot be described as of special merit, it is generally clear and sensible. In the geometrical parts of the book it seems to us that "the pupil is led to discover . . . the geometrical verities which he will have to prove later on," not so much "by the help of his instruments" as by the leading questions of the text. Articles 3 and 4 of chapter ix. might be revised with great advantage.

Pendlebury's Arithmetical Scheme B Test Cards. Standard II. (Bell.) 1s. net.—A set of 36 cards on the lines noted in THE SCHOOL WORLD, VII., 155 and 196.

Method in Arithmetic. By G. R. Purdie. 87 pp. (Pitman.)—The full title contains the words, "An aid to the intelligent treatment of the earlier stages," and if the advice given in the book is steadily followed there will undoubtedly be better teaching than is too frequently to be found, both in elementary and in secondary schools. Though on some points we do not agree with the writer, we think that the book is well worth the consideration of teachers of elementary arithmetic.

Blackie's New Concentric Arithmetic. Book II. By D. M. Cowan. 64 pp. (Blackie.) Paper covers, 3d.—Contains various novelties worth the consideration of teachers; at times the explanation of the processes seems to be hardly sufficient.

Graphs for Beginners. By Walter Jamieson. 64 pp. (Blackie.) 1s. 6d.—An excellent introduction to the subject, specially strong in its selection of examples that are of general and not merely of mathematical interest.

An Introduction to Elementary Statics. (Treated graphically.) By R. Nettell. 64 pp. (Arnold.) 2s.—A numerous and interesting selection of problems for solution by graphical methods. A pupil who works through the book according to the suggestions set out in the preface will obtain a good grasp of elementary statics; it will hardly be necessary, however, to work all the problems.

The "Council" Arithmetic for Schools. Scheme B. By T. B. Ellery. Part II., 45-92 pp.; Part III., 93-144 pp.; Part IV., 145-204 pp. (Black.) Paper covers, 3d. each; cloth, 4d. each.—The lessons seem to be well graded and to be thoroughly adapted to the pupils for whom they are designed (see THE SCHOOL WORLD, VII., p. 75). Part IV. contains some applications of the metric system; the juxtaposition of pictures of English and metric measures of length, capacity and weight, brings out the relative sizes.

The "Council" Arithmetic for Schools. Scheme B. Part V. By T. B. Ellery. 205-268 pp. (Black.) Paper covers, 3d.; cloth, 4d.—Takes up H.C.F., L.C.M., Vulgar Fractions, Practice and Bills of Parcels, with Recapitulation Exercises.

Blackie's New Concentric Arithmetics. Book I. By D. M. Cowan. 64 pp. (Blackie.) 3d. (paper covers).—This book has been drawn up by a practised teacher, and contains several elements of novelty that are worth the consideration of teachers generally. The book is believed to provide a two years' course, and to be simple enough to be used by the average pupil of from seven to eight years of age.

Miscellaneous.

A Dictionary of Economic Terms. By F. Bower. 166 pp. (Routledge.) 1s. net.—Likely to be very useful to "newspaper readers and students," for whose use it is designed. It contains more than a mere explanation of terms used in trade and economic discussions, many of the articles being short, clear explanations of commercial transactions of various kinds.

The Evolution of Knowledge. By R. St. J. Perrin. xiii. + 308 pp. (Williams and Norgate.) 6s.—The sub-title performs the part of adjective, "limiting" the meaning of the title. We learn thence that this is a "review of philosophy." Eighty pages are given to Greek philosophy, forty more bring us to Bacon, a hundred suffice for modern philosophy, except Herbert Spencer and George Henry Lewes, who have a "part" to themselves, consisting of eighty pages. The author has evidently a theory of his own, in accordance with which the above distribution is made.

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 Heuristic Method of Teaching Science.

WHEN Dr. Armstrong, in the course of his persistent and patriotic crusade on behalf of more rational teaching of school subjects revived the word "heuristic," he could not have foreseen its irritant effect; its immediate adoption by both sides (if there be two sides) showed the necessity of a word more simple and direct if not more significant in meaning, than "Socratic" or "inductive"; but from the very nature of our daily work we schoolmasters have thin and sensitive skins, and while in some cases the heuristic plaster causes only temporary rawness, in others it produces a deep seated and slowly healing blister. The opponents or, to be more accurate, the critics, often assume that it was invented something less than twenty years ago by Dr. Armstrong; he has never made any such claim, although he has in and out of season drawn attention to the fact that within recent years examination has well nigh killed the art of teaching in many of our schools. After all, the heuristic method is merely the method of carefully directed enquiry, whereby pupils are led, wherever possible, to draw their own conclusions, or in any case to understand clearly the reasons for the inferences drawn by the teacher. "Examiner" in his interesting letter calls heuristic teaching a series of "personally conducted trips," and I do not quarrel with his definition; whether such trips are enjoyable, useful and educative depends entirely upon the intelligence, experience and enthusiasm of the guide selected for the expedition.

I am unaware that any antagonistic method has been formulated, for I refuse to dignify purely didactic instruction as a method in education. Call it Socratic, inductive, heuristic, or what you will, it is essentially a rational method, and is and has been used consciously or unconsciously by every educator throughout all time. "Examiner" very kindly undertakes to state the case of "the exponents of the 'research' method of teaching science" for them, and then with a gentle hand tears it to pieces; indeed, to say that "pupils educated on heuristic lines are never nonplussed, when called upon to apply the results of their own experiments to problems more or less related to those already worked out by them in the laboratory, is an exaggeration that no teacher with three months' experience of boys and girls could make.

Without some knowledge of the character of the tests that "Examiner" imposed, it is not possible to assign a value to the typical answers he quotes; at first sight they appear to possess an element of scientific caution. If the pupils tested have been taught to think about and understand their lessons in all subjects from eight to fourteen years of age, I should be much surprised if they could not apply the methods upon which they have been trained to any problem cognate with those with which they have been dealing; but if a class of pupils between thirteen and fourteen years of age, who have received one year's instruction on "heuristic lines" during perhaps only three hours per week, are to be tested, the results of the test will only reflect the effects of the predominating kinds of instruction they have received during the previous six years; heuristic teaching is no nostrum intended to cure, in a few homœopathic doses, the mental ailments arising from prolonged neglect and absence of method; its advocates ask that scientific and practical methods shall pervade instruction in all subjects from the

earliest period at which the formal education of the child commences—the formation of habit and character is a lengthy process.

I gather from the tone of "Examiner's" letter that he is not greatly concerned about passing and failing pupils, but is honestly anxious by sympathetic inspection to do justice to and assess the value of the methods of instruction he is called upon to inspect; the aims and ideals of the teacher of science are only different in degree from those of the teachers of other subjects; the practical and experimental nature of his work, however, gives him educational opportunities beyond his colleagues. I attempt to summarise briefly these aims:—

(1) To produce accurate habits of work, of observation, of expression and of reasoning; in other words, to endeavour by the time the pupil leaves school to form those habits of self reliance and thought which in almost every case determine the ultimate measure of his success in life.

(2) To impart a solid foundation of knowledge upon which further instruction in science and technology can be based if necessary.

It is necessary that the teacher should keep these aims in view while devising his scheme of study, while preparing his lessons and during his instruction in the laboratory. Much teaching is labelled as "heuristic" which can lay no claim to such distinction; great experience, great care in the preparation of lessons, great patience, and the power to create interest in the subject are all essential to successful science teaching. On the other hand the teacher must not do all the work and spoon-feed his pupils; he must not forget to take stock every now and then of the amount of definite knowledge that his pupils possess; many a young and enthusiastic teacher lives in a fool's paradise and may receive a great shock when his class is subjected to a cross examination by an inspector.

In a school in which the endeavour is made to teach all facts from a reasonable point of view, there is the danger that the pupil will not learn the art of committing forms of words to memory; this danger, however, is easily counteracted by insisting that a few hundred lines of some standard English, French, or German author shall be learnt each year.

"Examiner" asks for definite answers to three questions, two of which are of a very indefinite character. In answer to the first question I should say that an average pupil who has spent three years at Elementary Science should know a very considerable number of scientific principles and facts; for example, he should have a real and thorough acquaintance with the methods of measuring length, area, volume, mass, density, pressure of fluids, time, temperature, and heat; by a purely experimental study of air, water, combustion, chalk, acids and alkalis, he should have gained satisfactory evidence of the constancy of composition of a pure compound, and should be able, when the atomic theory is enunciated, to appreciate that it constitutes a convenient working hypothesis for the explanation of the facts he has already learnt.

In thus outlining the ground that I have personally found it possible to cover, I am thinking of boys from thirteen to sixteen years of age, working from four to six hours a week in the laboratory. The latest Board of Education minimum for this subject, which the majority of headmasters will probably interpret as a maximum, cannot be regarded as a serious or effective allotment of time.

It is hoped, however, that some of the work outlined above will be attempted at a much earlier age than thirteen. Boys and girls of nine and ten can do much accurate weighing and measuring, and take a keen interest in such exercises.

Experience has convinced me that the student—juvenile or adult—profits immensely by going over much the same course of experimental work twice—in fact, in the average case I

believe, that the second course gives greater value than the first; the pupils see everything in better perspective, and their mental efforts are not fogged by novelty and detail. Of some thousands of teachers in English and Irish primary schools that have undergone training in scientific method under my supervision, those who have had advantage of a second course show a most marked superiority in conducting their work in school; such a repeated course shews that much knowledge which at the end of the first course is not examinable, has in reality become latent, and is readily set free when stimulated by second suggestion. When once our teachers recognise that a science lesson needs thought, aim, and method, there will be no two opinions that an attitude of enquiry is the only educationally effective method.

I would plead for greater educational faith, for I do not believe that an agnostic attitude of mind in teaching will lead to progress; if our teaching is logical, well organised and thorough, if we have a clear and definite aim before us, and if we can focus our efforts sharply on the future careers of our pupils, even at the risk of leaving the "examination" a trifle out of focus, I for one believe we shall be doing what is ultimately best for them. "Examiner" has raised questions which touch the whole art of teaching; we science teachers believe that the methods we endeavour to practise are rational and practical common sense, and that they are equally applicable and necessary to many subjects of instruction.

W. MAYHOWE HELLER.

Dublin.

The Use of Graphs.

THE letter from Mr. Hall on this subject in the April number of the SCHOOL WORLD makes what is to many of us a very welcome protest against the recent undue prominence of the graph in elementary mathematical work. This prominence appears to me to be due to the following causes: (1) the hope that an appeal to the eye will enable the beginner to understand what he is doing in mathematics, instead of simply working with symbols; (2) a desire to be up to date; (3) and this perhaps chiefly, a feeling that mathematics is not sufficiently practical. With regard to the last of these, it is interesting to notice the important place which graphs take in the examinations in Practical Mathematics of the Board of Education and in the books which are written for these examinations. A question like the following, taken from one of these books, is surely useless, and, moreover, incapable of being worked out accurately:—

$$\begin{array}{c|c|c|c} y & 180 & 24 & 3 & 7 \\ \hline t & 0 & 14.4 & 28.4 & 42.2 \end{array} \quad \text{Prove } y = ce^{-kt};$$

or this, from an examination paper,

There is a curve whose shape may be drawn from the following values of x and y .

$$\begin{array}{c|c|c|c|c} x \text{ in feet} & 3 & 3.5 & 4.2 & 4.8 \\ \hline y \text{ in inches} & 10.1 & 12.2 & 13.1 & 11.9 \end{array}$$

Imagine the curve to rotate about the axis of x describing a surface of revolution. What is the volume enclosed by the surface of the two end sections where $x = 3$ & $x = 4.8$."

I think one realises more and more how very limited is the experience of a boy of 13 or 14 and anything which will help him to realise something definite underlying the mystic x and y is certainly a gain. On the other hand, if this work is substituted for the abstract reasoning required for a geometrical or algebraical proof, then possibly more harm is done than good.

It seems to me advisable that a boy should know enough of graphs for the following:—

(a) To plot a curve, given a table of co-ordinates, and to find corresponding values.

(b) To find a and b in a simple proportion $y = ax + b$.

(c) To plot $x^2 + y^2 = a^2$, $xy = c^2$, $y^2 = 4ax$ $y = 10^x$.

(d) To illustrate the solution of simultaneous equations of the 2nd degree.

There is a tendency to stereotype the sort of question to be done by graphs in the same fatal way in which the methods of attacking questions have been prescribed by examiners for centuries—Find by practice—Prove geometrically—Questions 2-5 not to be treated algebraically—Show by means of a graph (there is no objection to this if it is intended for a hint).

By all means give a boy credit in an examination for neat and short methods of working, but to prescribe exactly what the method must be is an unnecessary limitation. The examiner should set such a question that it is obviously best done by a particular method if he wants that method used. If graphs are required, questions can easily be devised which will necessitate their use, otherwise the graph is not essential. Graphs in themselves do not teach a boy to think, and it is intelligence that we want, not mechanical drawing.

There is still, I think, some vagueness about our exact aims in the recent changes made in mathematical teaching. At one moment the chief idea is to make the subject interesting, and this certainly has filtered down somehow to the classes who are beginning to feel injured if they are kept solidly at work for any length of time. Then one throws over the attempt to be merely interesting, as not productive of sufficient tangible results, and the next thing that suggests itself is that by means of diagrams and graphs most of the principles of the calculus and higher mathematics can be taught to comparative infants. The results are again intangible, so in the end we probably come to the conclusions (a) that it is necessary to have a definite scheme of work for the year subject to slight alterations; (b) that the boys have to do the main portion of the work, not the master; (c) that interesting illustrations, graphs, &c., should be used sparingly, as illustrations are in a good book and not in a sixpenny magazine; (d) that in doing this work they should get help from any branch of their knowledge without any restriction save that of logical sequence.

C. H. BLOMFIELD.

Bradford Grammar School.

THE STUDY OF PEDAGOGICS BY CORRESPONDENCE.

The School World Club.

BOOK FOR STUDY.

Essays on Educational Reformers. By R. H. Quick. (Longmans, 1902.) 3s. 6d.

WEEKLY DIVISIONS OF THE BOOK.

Week	I. Chapters I.-III. (inclusive).	Week VIII. Chapters XIV. and XV.
"	II. Chapters IV. and V.	" IX., X., & XI. } Chapter XVI.
"	III. Chapters VI.-VIII. (inclusive).	" XII. } Chapter XVII.
"	IV. & V. Chapters IX. and X.	" XIII. } Chapters XVIII. and XIX.
"	VI. Chapter XI.	" XIV. } Chapters XX. and XXI.
"	VII. Chapters XII. and XIII.	" XV. } Chapter XXII. and Appendix.

SELECTED COMMENTS ON CHAPTERS XIV. TO END.

CHAPTER XX., Section 1.—"The question arises, not simply how to teach, but what to teach." What Quick wrote remains true, and modern schoolmasters seem no nearer to

agreement as to what subjects are essential for boys of each of the school years than were those of Quick's time. Some educationists affirm boldly that the subjects selected by which to educate children matter not at all; the only thing of importance, they say, is the way in which the subject is introduced and dealt with, and the way the boys are taught to regard their study. All subjects, they maintain, are of equal value as educative instruments. Perhaps in the hands of the ideal schoolmaster they are! But it seems strange to one of the rank and file of the profession that in a scientific age no psychologist or methodologist has tackled seriously the question of estimating the relative values of the various school subjects as instruments of education for juvenile intelligences of various grades of development. Surely it should be possible to determine the educational value of each subject for each of the years of school life?—R. FAWKES.

Section 7.—Here surely it may be said that a distinct advance has been made since the book under study was written? The Nature Study movement has undoubtedly many absurdities to answer for, but at least its promoters may congratulate themselves on having caused a more universal appeal to things instead of words. Numerous articles in *THE SCHOOL WORLD* are evidences that things, including animals, are introduced now into class-rooms continually. Teachers of natural science no longer tolerate the substitution—which Quick seems not only to countenance, but advocate—of pictures for living plants and animals. Blackboard drawings are good, and satisfactory pictures useful, but neither take the place of the object itself; and teachers rightly endeavour to base their demonstrations on living things which can be introduced into the class-room and encourage their pupils to draw conclusions from their own observations.—H. E. TOMKINSON.

P. 478.—Dr. Vogel's method was doubtless the best method for Dr. Vogel to employ, and a similar remark may be made about Dr. Vater's plan. I am disposed, however, to look with distrust upon the mechanical adoption by one teacher of a method developed by another. A good teacher's practice will continue to vary as the conditions of his class alter. He will not proceed on the same lines during the first period of the morning session as he will during the last lesson of afternoon school. He will have expedients suited to the ever-changing circumstances which present themselves. In other words, the experienced teacher finds he can use with advantage one method only, and that his own.—L. HORNER.

Sections 16 and 17.—Surely no science master would to-day countenance an introduction to the study of science by means of reading books?—F. R. BUDD.

"The occupation [of a teacher] is a very *narrowing* one." When a schoolmaster has the good sense, as Quick had, to recognise this fact, there is little danger of his settling down "insensibly into a kind of moral and intellectual stagnation—Philistinism, as Matthew Arnold has taught us to call it." It is the teacher whose mental horizon is defined by the edge of his class-room desk who is in danger. Readers familiar with the general conversation of the ordinary masters' common-room will know the results of the narrowing tendencies to which Quick directs attention. My experience shows that the more interest a master has in the larger problems of educational science, and the more he comes into contact with men engaged in other professions, the less likely is he to become the narrow dominion of popular prejudice.—R. BROADRIBB.

CHAPTER XXI.—*The Schoolmaster's Moral Influence.* Quick in my judgment lays the greatest emphasis upon the indirect influences which schoolmasters exert. The value of preaching to boys in school time is problematical. Teachers do well to remember that it is their everyday example which is the really important matter. Are they uniformly courteous to the

boys and to their colleagues? Are they consistently just? Is their contribution to the work of the form always their best? Are their references to "higher" things invariably reverent? These persistent influences are really the things that count.—J. T. GOUGH.

The greatest influence of the teacher is the atmosphere he forms around him. This is due to the kind of person he is much more than to what he does. The important point for a teacher is to be a good man before he is a good schoolmaster, the former always appeals to boys, the latter rarely, and never so strongly. "Be as thou would'st in thine own fair sight, so shalt thou in the world's 'ere long" is specially applicable in the world of school. Subtle psychological influences are at work all around us and none are more susceptible to them than children and young people. The second strongest influence is sympathy. Take a real interest in the taught as well as in the teaching and your influence is a foregone conclusion.—L. MARION JONES.

The first thing to cultivate in the young is reverence. And perhaps reverence and veneration are the virtues least cultivated either in or out of school. In the home, young children are encouraged to call their parents by pet-names, and when a little older are frequently allowed to select their own schools. Where respect is lacking for elders and superiors it is difficult to develop reverence for higher things. Reverence is the foundation of the "tone" of the school, and where reverence is wanting tone is also lacking. The master who reveres not high and holy things never gains the full hold upon his boys, for it is only when they realize that he is leading them into conformity with a will higher than his own, and that obedience to him is no subjection to an arbitrary power, that there is full union between teacher and taught.—L. MARION JONES.

CHAPTER XXII.—Quick's summary in this chapter is excellent, and admirably brings together the tendencies revealed by a study of the history of education. One remark in Section 33 suggests to me that the attitude of many public schoolmasters of to-day is just that of Dr. Johnson, "who asserted that education was as well known as it ever could be." They behave as if they have nothing to learn about education, as if their methods were perfect. It is this attitude on the part of masters in important schools which does much to retard the development of a science of education.—E. WYLMER JONES.

The School World.

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SIXPENCE.

THE ALTERNATIVE TO GREEK AT SCHOOL.

By F. W. HADLEY, M.A.

Assistant-master at Haileybury College.

IN spite of the vote recorded at Cambridge, compulsory Greek is doomed. The Bastille surrendered not because of the bullets which flattened themselves harmlessly on its walls, but because its defenders quailed before the rising tide of public indignation. And so compulsory Greek, this fortress of mediævalism, though able at present to treat with contempt the pattering of votes against its old walls, will nevertheless have to yield to public opinion, to the vigorous spirit of the twentieth century. Before long it will be the privilege of the very few—the few who are not “rushed” by the strain and stress of modern life—to be nurtured in part on this noble language. The intelligence of the country—the great mass of it—has already pronounced against Greek as a compulsory subject at the Universities. This old-world institution has been maintained in its position by an antiquated and unsympathetic clericalism that refuses to believe that we have left the Middle Ages far behind us. There was a time when a student of Greek was a progressive. He was breaking loose from the fetters that bound the schoolmen too exclusively to Latin. But things are altered now. Greek is still, no doubt, admirable for those who can take it in their stride, make a real study of it, and extending their education till they have reached the age, say, of twenty-three, have time to get an insight into some more modern subjects that are not unimportant. But this is not possible for the generality. We have to consider the claims of those who have to begin early to prepare for a profession, or who, for whatever reason, bring their years of learning and training to a close before they have gained half the knowledge that we should like to consider the irreducible minimum. There are also those—there is no denying it—who have no linguistic ability, and yet who, being men of brains and enlightenment, ought to be welcome at a university.

Greek is not the thing for either of these two classes. It is no use to say that Greek is good. No doubt it is very good. To get any real good out of it these men would have to sacrifice what to

them is of much greater worth, not only professionally, but, for many of them, educationally. Greek should not be allowed to exclude science, as it does too often. It is not right that a boy should grow up knowing little or nothing of the achievements and the onward movement of the age to which he belongs. He must give time, therefore, to science, or he will have no capacity for understanding much that ought to be intelligible to him. He will also have to learn some foreign language, if not as part of his education, yet as a matter of practical utility. All this will cut largely into his available time, and we have to consider how, under these conditions, we can give him a good linguistic training. Now, foreign languages—*e.g.*, French and German—only in part supply what we want. Modern authors read in scraps, a page or two at a time, have not the interest that is to be found in Horace or Virgil, Aeschylus or Sophocles.

There remains the English language, if we can only solve the great educational problem how to teach it. Let a boy be taught his own language thoroughly, and get a fair knowledge of its literature. He will not then have much reason to regret that he is debarred from Greek. But how is this much desired consummation to be attained? If English is to be taught as Latin and Greek and French and German are usually taught, a small amount being learnt during a preparation of half-an-hour or so, and then brought up as a lesson to be heard, the result will, no doubt, be deplorable. The boy must read long stretches of English by himself or with a certain amount of assistance, according to the nature of the book and his capacity. He must make out what the author is trying to make clear, wring from the book its meaning, and not only must he make the substance of it his own, but be able to reproduce it in clear English. This will help him to emerge from the spoon-fed stage in which everything is handed to him partly pre-digested by his teachers, while he himself is never expected to tackle a subject unassisted, to study a book as a whole, to make one part explain another, thinking over its difficulties, and coping with them to the best of his power. Even if some points remain obscure to him under the more bracing system I recommend, it matters little if only he learns the habit of facing difficulties. He must, of course, be armed with an English dic-

tionary, a thing too often absent from a boy's school equipment. There are many books which he may be set to read—*e.g.*, some of Macaulay's Essays, volumes from the "English Men of Action," "Rulers of India," and "English Men of Letters" series. Lord Milner's "England in Egypt," with the exception of one or two of the more difficult chapters, would be admirable. Then there is Seeley's "Expansion of England." There are books on architecture and natural history and a variety of subjects which may be studied in the same way.

This involves, of course, the shortening of school hours to make room for more out-of-school work. By the shortening of school hours I mean the shortening of the time during which the school-master talks. The reading recommended may, of course, go on in the presence of a master who will simply insure quiet and answer an occasional question. But it is most desirable some of it should be entirely independent of supervision. The boy should learn to swim without corks. This will put our teaching on a healthier and less enervating basis. Let us constantly be demanding of boys that power which we ourselves wish to have—the power of getting a thorough grip of a subject when we study it by ourselves. But there must also be teaching, and plenty of it. When the boy puts down on paper the ideas that he has got from the book he has read, many will be found to be very wide of the mark. On these points he must be set right. And here is the true work of the teacher. Encouraging the learner to make all the headway he can by his own unaided efforts, he takes him by the hand when he has gone astray, and sets him on the track again.

In dealing with boys it is important to insist on their studying not only the matter of the book but particular words. They must enlarge their very limited vocabulary, and so add to their ideas, for words are ideas crystallised. They must familiarise themselves with the most difficult words that occur, and learn to work them into sentences so as to make their meaning clear.

Then there is the question of poetry. The main strength of English literature is in its poetry, and it is a lamentable thing that boys should grow up knowing so very little about it. They should be made to read it aloud and to themselves, and to learn a good deal by heart. In reading plays they can take parts, and then there cannot be any lack of interest. But how are we to manage an examination in the poetry read, in poems of Tennyson's for instance? Here is indeed a difficulty. It is better to have no examination than one which does not deal with the right things. But we can always ask for paraphrases, for short essays on characters, for the most striking metaphors and similes employed. It is good, too, for boys to write English verse. Poor as the product will no doubt be in most cases, it will help them to appreciate what they read.

Let us now return once more to the subject of foreign languages, especially French and German. They are best taught in the early stages conversa-

tionally, with plenty of stiffening in the form of grammar lessons and written exercises. But with advanced forms we may use other methods. We may treat foreign languages as we do our own. We may give our pupils a simple book in French or German, and demand that they should master its contents. It is admirable training for them if only the books are well chosen, extracting the meaning of the French or German, and getting to look upon the language in question as an instrument to be used. To many men, to the great majority I think, the power to do this would be of far more value than the power of speaking the language with moderate fluency. But beyond the question of utility in the narrower sense, we have here a way in which French or German can be made really educative. French especially, being easy to read, far easier than Greek, Latin, or German, may well be made a means of gaining knowledge. For lucidity French prose can hardly be equalled. Why, then, should we not learn through French as we do through English? In every case our pupils should be made to reproduce in lucid English what they have learnt by their reading.

Foreigners sometimes remark about English boys that they are ready enough to work when they see the practical bearing of the task set them. It is possible by following the methods I have sketched to make linguistic studies much more practical than they are under the system most commonly in vogue in England. Any boy can see that it is important that he should be able to understand and reproduce in good form what he reads in English. This method will appeal to his good sense, and will, moreover, constantly bring home to him his shortcomings. There are numbers of subjects of which it is desirable that boys should gain an efficient knowledge, and of which, as a rule, they know next to nothing. The process of learning English ought to introduce them to such subjects; and their French, possibly also their German, can be enlisted in the same service.

I have said much about practical utility. But I should be very loath to treat educational questions solely from this point of view. Introduce boys to good English prose, and, still more, to good English poetry, and not many of them will bring to their reading a mere utilitarian spirit. They have a remarkably genuine and hearty appreciation of Shakespeare.

A School Manual of English Grammar. By Theophilus D. Hall. vi. + 263 pp. (Murray.) 2s. 6d.—This is a very old friend in a most modern dress, and as we turn its pages it seems almost impossible to conceive that a whole generation has passed away since its first issue in 1872. But these thirty-three years have been very fertile in philological research and grammatical study; consequently this volume, if it were not to be ousted from its position, must be brought up to date. The work of revising this new edition has been well done, and to a large extent the work has been completely rewritten. The examination questions and exercises are mostly new, and are constructed to meet modern requirements of examining bodies.

A SCHOOL HOLIDAY IN FRANCE.

By G. F. BURNES, B.A.

Headmaster Russell Road Pupil Teacher Centre, West Ham.

IN the midsummer holidays of last year we arranged a fortnight's holiday in France for a party of twenty-two of our pupil teachers, eight boys and fourteen girls. Our anticipations of a novel, interesting and enjoyable holiday were realised to the full, and this article is written in the hope that an account of our visit, giving information as to its arrangement and organisation, may prove interesting and helpful to teachers contemplating a similar venture.

The great value of such a holiday to both teachers and pupils need not be insisted on. The opportunities it affords to the teacher of sharing a common life with his pupils under natural conditions when the necessarily somewhat formal discipline of the school can be dispensed with, of taking a part in their walks and excursions as one of them, of showing them that he is at home with them and that he thoroughly enjoys himself in their company, are such as can be obtained in no other way. The respect of the pupils for their teacher is strengthened and his influence over them correspondingly increased.

In planning this holiday I kept three points in view. In the first place, it was necessary to keep the expenses of fare, board and lodging within very moderate limits; to secure as low a fare as possible I therefore confined my inquiries, in seeking a suitable place, to the departments of Pas de Calais and the Nord. In the second place, I was anxious to find a place of a size sufficiently large to present a fairly typical view of French life. Lastly, I hoped to find a town and neighbourhood interesting in itself from the point of view of its situation and history, and one that touched English history at some point or points.

Many of the French Écoles Primaires Supérieures provide accommodation for boarders; it therefore occurred to me that it might be possible to make arrangements for the board and lodging of our party at one of these schools. I communicated with Monsieur l'Inspecteur Primaire for Boulogne and asked the favour of his advice and co-operation. He responded cordially to my request and furnished me with valuable information. He thought the experiment we were about to try a most valuable one, and one that could only result in good. With such a party as I wished to take, the plan of distributing its members in private families which I had suggested as a possible alternative to staying at a school would prove, he said, difficult of realisation. He suggested that we should find all we desired in the way of accommodation at the École Primaire Supérieure et Pensionnat of Montreuil-sur-mer (Pas de Calais) and gave me an introduction to its director, M. Thélu.

I made known my wishes to M. Thélu and received from him the following letter, which he has permitted me to publish:—

Si le séjour de notre ville pouvait vous plaire, je suis tout disposé à recevoir votre caravane.

Montreuil est vieille petite ville, très saine, pittoresque et intéressante. Elle est à 40 km. de Boulogne, à proximité des plages de Berck et du Touquet et Paris-Plage, localités auxquelles elle est reliée par des lignes de chemin de fer et de tramway. La région environnante offre de très jolies excursions à faire.

Je mettrai à votre disposition mon école, dont je vous envoie une vue, et où vous pourriez installer à l'aise vos jeunes gens. Je vous donnerai sur cette installation tous les détails que vous désirerez.

Quant au prix il serait de 4 francs par jour et par personne, tout compris, logement, service, repas comprenant.

Petit déjeuner = café, lait, beurre, sucre.

Repas de midi = hors d'œuvre, viande, légume, dessert.

Repas du soir = potage, œuf, viande, légume, dessert.

Je ne ferai pas de cela une question d'argent, mais je suis moi-même très partisan des voyages scolaires; j'en organise avec mes élèves et je serai aussi heureux de vous donner mon concours que je le suis de celui qu'on me donne dans le même cas.

Pour ce qui est de l'époque du voyage je préférerais les grandes vacances, Août et Septembre, parce qu'à Pâques, nous n'avons que 11 jours de congé et que la saison est fort peu agréable en général en mars et avril.

Montreuil-sur-mer (the town is, by the way, 12 kilomètres from the sea) answered all our requirements; it was not far from Boulogne, the fare, therefore, would not be heavy; it had a population of about 4,000 and would, therefore, present a fairly typical view of French life and customs; it was historically interesting; accordingly I accepted M. Thélu's offer and arranged our visit for the last two weeks in August.

The name of Montreuil-sur-mer will be familiar to the readers of Victor Hugo's *Les Misérables*. The town is perched on a hill which commands delightful views of the surrounding country. It owes its origin to a convent established by St. Sauve in the seventh century; the incursions of the northmen caused the town to assume importance, for it was the place of refuge for the people of the valleys. It stands on the old main road from Calais to Paris. It was at Montreuil that Sterne, journeying from Calais to Paris, engaged his faithful valet, La Fleur.

Situated on the boundary line between Ponthieu and Flanders, its possession was long a bone of contention between the Kings of England and the Courts of Flanders on the one hand and the French kings on the other, and it suffered much in consequence. The other facts which make the town interesting to English visitors are, its position on the line of Edward III.'s march from Crecy to Calais and its proximity to Etaples, the scene of the Magnus Intercursus of Henry VII. Having fixed a definite time for our visit, I approached the S.E.R. company with a view to secure reduced fares; we obtained return tickets from Charing Cross to Boulogne, available for fifteen days, for 13s. 6d. The cost of fare, board and lodging for thirteen days was therefore as follows:—Fare to Boulogne, 13s. 6d.; to Montreuil from Boulogne, 2s. 6d. (return); board and lodging £2 2s., a total less than £3. Our necessary expenses

beyond this were exceedingly small, so that a sum of £3 10s. was quite sufficient to enable our boys and girls to obtain a thoroughly good holiday.

The school being a Communal one, it was necessary to obtain the sanction of Monsieur le Maire de Montreuil to our stay at the school. This he readily granted and expressed the hope that our stay would prove interesting and enjoyable.

Our party, full of eagerness and anticipating all sorts of wonderful things, left Charing Cross by the morning train on the second Friday in August. A three hours' stay at Boulogne gave us time to walk round the town and give to our pupils their first impressions of French life. A railway journey of forty minutes brought us to Montreuil in time for the evening meal, the *menu* for which furnished sufficient matter for the first batch of postcards to England.

We found that the arrangements made for our comfort were all that could be desired; the dormitories and dining-room were exceedingly clean, the sleeping accommodation excellent and the food very good. The girls' dormitory was placed in charge of two lady members of the staff, Miss Collins and Miss Crow, who accompanied the party and made themselves specially responsible for the girls; for the boys' dormitory I was responsible.

M. and Mme. Thélou did all in their power to make us feel at home, and in this they succeeded. The large dining-room was provided with a piano, and this proved a decided acquisition in the evenings. M. Thélou also very kindly placed at our disposal his dark room and its contents, and this was much appreciated by the photographers of the party.

The *petit déjeuner* was served each morning at 8 o'clock; this finished, we usually set out for a long morning walk. M. Thélou generally accompanied us and proved a genial and interesting guide, his son and three of his pupils who were learning English also shared in our walks and excursions. The sight of one of these French youths surrounded by four or five English boys and girls, all eager to practise their French on him, was certainly interesting, as was the unfeigned delight they displayed when he showed signs of comprehending them, and his manifest pleasure at a fairly successful attempt to make himself understood in English.

M. Thélou gave all his explanations and descriptions in French, which he spoke very clearly: only on one occasion did he break into English; we were all seated on the slope of a hill, resting for a while, after a two hours' walk; I asked our boys and girls to give M. Thélou three English cheers, which they did right heartily. M. Thélou appeared a little embarrassed, and then suddenly gave utterance to a very vigorous and distinctly English "shut up."

We arranged to get back for the mid-day meal, for which we were always ready, at one o'clock. For the afternoons we made no definite arrangements, as it was most desirable to leave the pupils entirely to their own devices and to encourage them

to get about as much as possible to see and learn all they could for themselves.

They, therefore, broke up into small parties and did what taste and inclination led them to do: strolls round the ramparts, from which splendid views of the surrounding country are obtained, walks through the streets of the sleepy mediæval town, visits to the ancient church of St. Saulve and to the chapel of the Hôtel-Dieu were undertaken as fancy dictated.

Some of the boys utilised the afternoons for cycle rides in company with M. Thélou's pupils. The girls made a very important discovery quite early in their shopping expeditions, they found a shop at which tea could be obtained; they clubbed together—for the tea was 6s. per pound—and brought back a supply; accordingly, for the rest of the holiday there was afternoon tea at 3 o'clock. Following the evening meal, which was served at 6.30, the dining-room was cleared and songs and round games were indulged in till about 10 o'clock, after which, to bed. The evenings were very much enjoyed, the adventures of the day were described, and the successes and failures in speaking French, in shopping, in finding one's way about, &c., were related with gusto and interest; one girl was particularly proud of the fact that her French had been equal to persuading a shopkeeper to reduce the price of a brooch by 30 centimes.

The round games and charades played were evidently new to M. and Mme. Thélou, and to Master Thélou and his companions, who joined in them quite as heartily as we did. One of the French lads added to the enjoyment of the evenings by giving us selections on his violin.

Our boys and girls tried to teach their French friends "God save the King," and they in their turn were no less eager to teach us the "Marseillaise." Before the holiday terminated M. and Mme. Thélou invited us to a special supper they had prepared for us; this function, as may be expected, proved a great success. M. Thélou formally expressed the great pleasure our visit was affording him. It was his first acquaintance with English boys and girls, he said, and he had learnt much; he was specially struck with the fact that they enjoyed themselves so thoroughly, and yet they never allowed liberty to degenerate into license; he had imagined that English boys and girls habitually carried long and serious faces, and that they took their pleasures very sadly; our visit had shown him that his opinions in this respect would have to be greatly modified. In responding, I expressed our appreciation of the kindness of M. and Mme. Thélou, and of all the French people with whom we had been brought into contact. We should carry away with us a most pleasant recollection of our visit and the sincerest regard for all the friends who had been so kind to us at Montreuil.

During the fortnight two outings to Le Touquet and Paris-Plage, a typical French watering place, were arranged. We went by train to Etaples and thence on foot or by electric tram to Le Touquet and Paris-Plage. M. Thélou supplied us with satchels, and in these the lads carried the food which

had been prepared for us by Mme. Thélu; the mid-day meal, which was taken in picnic style in the pine woods of Le Touquet, was a great success.

Market-day at Montreuil proved another interesting day, and provided splendid facilities for practice in French. Full advantage was taken of the opportunities it afforded; many small purchases were made and the amusing incidents to which these gave rise were duly related in the evening.

From time to time games of hockey and football were indulged in in the school playground, and the fact that the French lads were expert in wrestling and *la boxe* immensely increased the respect of our lads for them.

The fortnight passed very quickly, and at its conclusion the unanimous verdict of our boys and girls was, "This is the best holiday we have ever had."

The effects of the holiday have realised our anticipations: a marked increase in the interest taken in French was observable from the moment the idea of a holiday in France was mooted, the pupils felt that they were not studying "an extra" but a real live language; that feeling has continued, the reports of the holiday brought back by those who took part in it have had a marked effect on their fellow pupils; they, too, feel that opportunities may arise for using their French and that ability only to read the language is not sufficient, they must learn to understand and speak it.

A fortnight's stay in France did not, of course, enable our pupils to do much in the way of speaking and understanding the language; all were, however, able to do their own shopping and to find their way about; they obtained practical experience in the use of French money and measures, and the inscriptions and advertisements that always met the eye were a source of continual interest and knowledge. The main value of the holiday to them lies in the fact that they have received a decided stimulus and that their interest in France and the French has been quickened. Given stimulus and interest in a subject, progress is only a matter of time.

Another result has been to create in our pupils' minds a feeling of respect for the French people and the removal of misconceptions due only to lack of knowledge.

We have reason to believe that *les Anglais* left behind them a good impression at Montreuil, and that they have done something, be it ever so insignificant, to promote and develop the good feeling that should exist between two great and neighbouring peoples.

The British Colonies and their Industries. By W. P. Greswell. xvi. + 191 pp. (Philip.) 1s. 6d.—A good little book, the special feature of which is, besides a general account of the colonies, a series of chapters on some thirty industries pursued in various parts of the Empire. It is apparently intended to be used in conjunction with sets of lantern slides to be had on hire or otherwise from the publishers.

THE SCHOOL JOURNEY.

By ERNEST STENHOUSE, B.Sc.(Lond.)

Associate of the Royal College of Science, London.

IF nature-study has come to stay—and such a belief seems abundantly justified—the school journey will assuredly take an increasingly important place in schemes of elementary education. For school journeys, properly organised and carried out, represent nature-study at its very best. The value of school gardens and aquaria, of indoor observation and experiment in the structure and physiology of plants, even—though to a much smaller extent—of the reading of good books "about nature," is now freely admitted by every teacher; but the very success of these methods of study shows, and experience has repeatedly proved, how much more vital the instruction may be made if the impressions thus gained are constantly corrected and amplified by the conditions of the "real" country.

So much depends upon local conditions of various kinds, so much must of necessity be left to the initiative of the teacher, that it is manifestly impossible in the present article to do more than enunciate certain general principles. In the first place, it should be borne in mind constantly that the primary object of the school journey is the cultivation of habits of thoughtful observation; and that the chief danger to be guarded against is that out-of-focus condition into which the mind, like the eye, inevitably falls when it is concerned with too many things at once. To obviate this danger the teacher should go over the route in advance, noting carefully the features, physical and otherwise, which afford material for observation and investigation by the class. The order in which these features may best be studied should be decided upon, and a scheme of several visits, each to be concerned with one special subject of study, can then be drawn up. Such a preliminary survey should suggest a plan by which every member of the class may be allotted a definite task—to find something or do something, or to solve some problem on the spot.

These principles may be best illustrated by a special example, but it will be obvious that the same ideas, with modifications in detail, may be applied in any district. The sketch-map illustrates a walk through Healey Dell, near Rochdale, Lancashire. The rocks which are exposed at various places along the route belong to the Carboniferous formation, and are composed of shale, coal or millstone grit.

The object of the first journey will be in most cases to familiarise the class with the "lie of the land" and the most obvious features of the scenery. As a preparation, lessons should be given on the points of the compass and the various methods of finding the direction of the north. The simplest of these is by the use of the compass: it being remembered that the needle points about 16° to the west of true north. A second method depends on the fact that at noon the sun is in the south and that

therefore (because the hour hand of a watch makes two revolutions in the twenty-four hours) the north and south line approximately bisects the angle between twelve and the hour hand, if the latter is pointed to the sun when the watch is horizontal. Incidentally, the method of finding the pole-star might also be explained to the class. Further, each pupil should be encouraged to find out how many steps he takes, on the average, in pacing a given measured distance. If the general direction of the walk is north and south, as in the example, it will be found best to begin the first journey at the south end (in this case from Shawclough Station), since to most children it is easier to conceive of a journey northward than in any other defined direction. Throughout the ramble constant reference should be made to the direction of the route and the relative positions of well-marked features of the landscape. The distances between certain points should be estimated, and, whenever possible, measured (by pacing), and notes made by the class. For example, from Shawclough to Ending the distances and directions are roughly: $\frac{1}{4}$ -mile W.N.W., $\frac{1}{3}$ -mile N.N.W., $\frac{1}{4}$ -mile E.N.E. In the first journey also the class should be made to notice where the ground slopes most and where least (the direction and angle of slope should

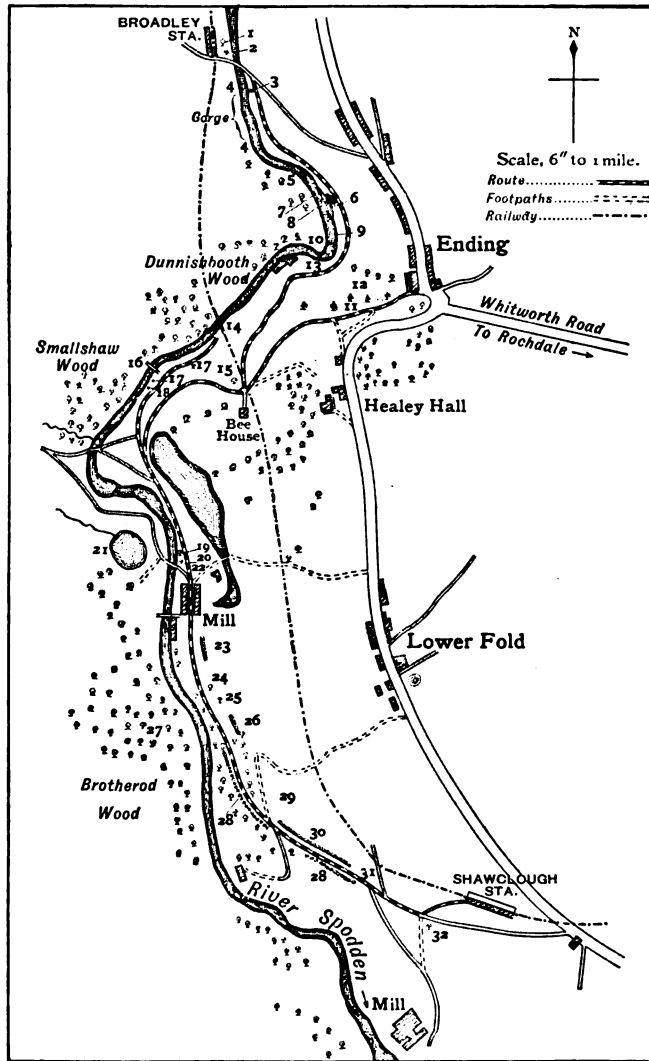
be estimated in a few cases), and the names of neighbouring woods, farms, &c., should be learnt. The direction of flow of the river and the various bends in its course should also be noted, and reference made to the route by which, after joining that of other rivers, its waters ultimately reach the

sea. Afterwards, the pupils should write an account of the journey and, in the higher classes, should be encouraged to draw a sketch-map, however crude, from memory.

Before the second journey each pupil should be provided with a blank sketch-map of the route. This may, in the first instance, be copied or traced from

the six-inch Ordnance Map, and then duplicated in large numbers by means of one of the many appliances for such work. Only the route and river, and a few of the more conspicuous landmarks, should be indicated on the maps as given to the class: details should be filled in, on the spot, by the pupils. The object of the second journey may conveniently be the study of the river and its work, and for this purpose it will be advisable to follow the stream in the direction of its flow. Variations in the speed of the current, and in the width of the stream and the hardness of the rocks or banks between which the water flows, should be noted, and the relations between cause and effect elicited by questioning. The hardness of the rocks at 4 has prevented the channel from being widened to a greater extent by the water, and accounts for the rapidity of the flow. A glass of water collected here is found to contain much suspended gravel. The considerable loss of weight of bodies

in water is noteworthy, as explaining the great size of the stones which may be transported by rivers. The scouring action of such stones is shown in the fine "potholes" at 4 and below the waterfall at 10, and has resulted also in the quaint stone portico of the "Fairies' Chapel"



HEALEY DELL, ROCHDALE.

Scale 6in. to the mile.

(The route is shown by a thick, broken line, the railway by "a chain line"; footpaths are marked by dotted lines.)

- 1, birches; 2, willows; 3, beech; 4, potholes; 5, two waterfalls; 6, shallows, and vertical concave bank; 7, "Fairies' Chapel"; 8, stratification of rocks; 9, mud deposits; 10, waterfall; 11, docks; 12, sloping trees; 13, weir; 14, railway viaduct; 15, horse chestnut; 16, aqueduct; 17, sycamore; 18, elm; 19, elm; 20, beech; 21, pond life; 22, well; 23, shale; 24, sycamore; 25, oak, bearing leaves in winter; 26, flagstones; 27, beeches, with rooks' nests; 28, hawthorn hedge; 29, solitary oak; 30, gutter, with *Pellia*; 31, blackberry bush; 32, stunted oak.

Emery Walker sc.

under the right (west) bank of the river at 7. Again, the difference in the rate of erosion of hard and soft rocks has had much to do with forming the waterfalls at 5 and 10. Where the stream is wider and the flow slower (as at 6 and 9, and below 10), may be noticed sand and mud deposits; and where the stream makes a bend it is found that the slowest flow and the maximum deposit are on the convex bank; while the concave bank is worn almost vertical (as at 6 and other places) by the swifter rush of the water, and may be undercut to such an extent as to cause the bank to give way. In this manner a river is constantly changing its course. The weir at 13, and the old water-wheel still to be seen in the ruined mill below, suggest remarks on the motive power of water, and on the circumstances which may cause the old industries of a district to be superseded by new ones. Along the rest of the route the bed of the river is less steep and its banks exhibit less variation, but still afford plenty of material for study. The railway viaduct at 14 and an aqueduct at 16 suggest at least a casual reference to the derivation of the terms. Before the pupils are asked to write a "composition" on the ramble, a revision lesson on the features noticed should be given, and the accuracy of the entries on the sketch-maps checked by comparison with an enlarged map drawn by the teacher, or with a large "parish plan" of the Ordnance Survey, on the scale of 25.3 inches to the mile.

It will be well to devote two or more journeys to the study of the trees along the route. One of these should be taken in the spring, before the leaves are out, and another in the summer, when the foliage is well developed. It is far better to study three kinds of trees in some detail than to risk confusion at the beginning by attending to a dozen. In Healey Dell the commonest trees are beech, oak, and sycamore, and these serve admirably as an introduction to tree lore. If the first tree-journey be taken in the summer, the leaves of some three abundant species should be compared and contrasted, and each pupil should secure good specimens, to be drawn and preserved afterwards. The presence of a little bud in the "axil" (the upper angle between leaf and twig) of most of the leaves should be pointed out by the teacher; and since the arrangement of the buds (and therefore of the subsequent branches of the twig) thus depends on the positions of the leaves, this last point is of considerable interest. In the sycamore, the leaves are in pairs at right angles to each other; in the beech and oak they are single and alternate, but much more crowded together in the oak than in the beech. The bark of the three trees is equally distinctive, and with the method of branching (obscured when the foliage is thick) serves to identify the trees from a distance in the winter. In winter and spring the interest of a tree is centred in its buds, and there are few things which more richly repay study. In spring, attention should also be given to the flowers—generally arranged in catkins—of common trees. Separate sketch-maps should be used as records of the positions of the more notable trees or plantations along

the route. Any tendency to vandalism on the part of the pupils by tearing off branches should, of course, be sternly repressed; especially interesting twigs should, on occasion, be cut off by the teacher only, for later study.

There is much diversity of opinion as to the way in which flowers may best be studied in a limited number of school journeys. In most cases it will perhaps be impracticable to attempt more than teaching the names and calling attention to the habitat of the commonest. This, though a necessary introduction to the subject, tends to degenerate into a mere exercise of the memory, and in itself possesses little educational value. It should be supplemented by a detailed examination of a typical flower—say a buttercup—and by the explanation of the work of each part. Once the pupil has understood that the single duty of a flower is the production of healthy seeds, and has been led to notice how, by the aid of ingenious devices, the up-to-date plants have learnt to call in the aid of insects, while the more conservative families still rely on the aid of the wind, he will be eager to discover for himself "how the thing works." With young children it is folly to attempt any but the very broadest principles of classification of flowers; but quite young children can appreciate the advance from flowers without petals, through flowers with separate petals, to those with petals united to form a tube (thus restricting the nectar more and more to "useful" insects); and so understand the advantage which a primrose has over a buttercup, and a buttercup over an oak flower.

At least one journey should be given, in the autumn, to the study of the dispersion of fruits and seeds. The pupils should provide themselves with empty match-boxes or chip pill-boxes. In this ramble the class may with advantage be divided into four groups. Group A will collect examples of fruits and seeds which are dispersed by the wind; Group B, fruits which by means of hooks or otherwise become attached to the hides of grazing animals, and are carried far from the place where they grew; Group C will collect fruits which tempt animals to eat them for the sake of sweet pulp (in these cases the pupils should find out (a) how the fruit is made conspicuous, (b) how the seeds themselves are protected from being injured by the animals); while Group D will search for specimens of plants which sow their own seeds.

There still remains abundant material for study in this walk, and mention only can be made of the sticklebacks, frog-spawn, snails, caddis-worms, dragon-fly larvæ, bloodworms—of the "things creeping innumerable, both small and great beasts"—which have been found in the river, ponds and wells along our route, and have been used to stock the aquarium; of the rabbits and birds; of the nests of ants and wild bees and wasps; of a certain black-berry bush (31) rich in interesting leaves; and of a thousand and one other things which, under the guidance of a judicious leader, may well be the means of teaching children to see what they look at and to think about what they see. For this is the first and last object of the school journey.

THE SCHOLASTIC CAREER IN SWEDEN.

By GUSTAF AAE, Fil. Kand. (Lund),
and
C. S. FEARENSIDE, M.A. (Oxon).

THE questions of providing a sound training, an adequate and progressive rate of pay, an assured position and a safe pension for secondary-school teachers, have been much discussed of late in the British Isles. Hence it is hoped that the following brief account of the way in which these questions are dealt with in a country that, in other educational matters, has often been held up as a model to England, may possess some interest and possibly some value in the eyes of British readers. Of the authors named above, the Englishman (who has the good fortune to be resident in Sweden) has done little more than suggest the plan, and fill out a few details for his Scandinavian friend and sometime pupil, who is at present undergoing his year of probation. It will be seen in the course of the narrative that the Swedish school-master has a somewhat more arduous path to pursue than his British *confrère*, but that, by way of compensation, he has a better chance of attaining a secure, respected and remunerative position in life.

It will be well to set forth clearly at the very outset our present field of vision. We are not here concerned with the primary schools for boys and girls (*folkskolor*), the management and the staff of which are kept entirely separate from those of the secondary schools; nor with girls' schools, which are subsidised by the State, but are not subjected to any considerable degree of State control; nor with any of the comparatively few "private venture" schools for boys. We are here dealing solely with the State-supported and State-controlled secondary schools for boys (*allmänna läroverken*) which conduct by far the greater part of the secondary education of Sweden. It is not uncommon, however, for those who have qualified, or are qualifying, themselves for posts in the State schools to take service in private schools.

(i) THE TRAINING OF THE SECONDARY SCHOOL-MASTER.—In Sweden the training of a teacher comprises two distinct stages: academical studies and a year of probation. As in England, however, there are still many survivors from the time before degrees became a necessary qualification.

(1) **Academical Courses.**—Anyone who intends to adopt as his profession the career of a teacher in secondary schools must begin by entering as a student at one of the universities (Upsala or Lund), or at the University College (*högskola*) at Gothenburg. Of the four Faculties which there are to choose from at the universities, he will naturally choose that of Philosophy, which corresponds to the undivided Faculty of Arts at the two older English universities. The studies for this course fall into three stages, each marked by a series of examinations (which are taken not *en bloc*, as in most of the English degree-examinations, but piece-

meal, like the St. Andrews L.L.A., and the Cambridge Higher Local) and culminating for the successful in a degree.

(a) *Filosofie-Kandidat* [=B.A.]—To attain the degree of "Kandidat" the student must pass in at least five subjects¹ which he may choose at pleasure within the two divisions of the Faculty of Philosophy, viz., Letters (*humanistiska sektionen*) and Science (*matematisk-naturvetenskapliga sektionen*). On an average, three years are spent on preparation for the "Kandidat" examination. If the student is willing to rest content with this result, he is now entitled, provided that four school subjects form part of his examination, to apply for leave to pass through a year of probation at one of the secondary schools at which such courses are arranged. But the "Kandidat" examination qualifies a man only for the inferior position of *adjunkt* [see under (ii) below]; and if the student is ambitious and wishes to attain qualification for the higher post of *lektor*, he must spend some years more at the university and complete his studies by passing the "Licentiat" examination.

(b) *Filosofie-Licentiat* [M.A.]—The "Licentiat" examination embraces at least three subjects, unless the student has previously passed the "Kandidat" examination, in which case two subjects will suffice. Now it happens comparatively seldom that the "Licentiat" examination is passed without being preceded by the "Kandidat" examination. For a "Kandidat" the "Licentiat" examination in general requires a period of five years; yet the time may vary considerably according to the subjects the student chooses or the "class"² at which he aims.

To the demands for this examination belongs also the scientific dissertation on some subject selected by the student himself. Thus, a young man who wishes to devote himself to the teaching profession with some chance of making a career cannot assign less than eight years to his studies at the university; and there still remains the probation year.

(c) *Filosofie-Doktor*.—But not even after having passed the "Licentiat" examination and gone through his probation year, is he entirely qualified for a "Lektorship." Before that he will have to compose a "doctor" dissertation, and defend it solemnly before the Faculty. No wonder that a strong movement is now making itself felt among the students of the universities and their instructors with a view to effect a shortening of the time set apart for academical studies; and an examination committee has been appointed this year with orders to work out suggestions for improving the present state of things. An effective shortening of the time spent in studies would also be of great im-

¹ *Subjects* is a term vague enough to need definition; hence the subjoined list. (1) *In Letters*: Theoretical philosophy; practical philosophy; esthetics; history; political science; Latin; Greek; Scandinavian Languages; German; English; Romance Languages; Semitic Languages; Sanscrit and comparative philology. (2) *In Science*: Mathematics; astronomy; physics; mechanics; chemistry; geology; botany; zoology. Geography is considered common to both sections.

² *Class*.—There are no separate examinations for "pass" and "honours" candidates; but the attainments of the examinee in each subject are roughly indicated on his certificates or testimonials by the marks *approbatur* ("pass"), *cum laude* ("distinction"), *laudatur* ("honours").

portance for the numerous students who are now driven to have recourse to borrowing in order to get over the many years of study: it is by no means exceptional for Swedish teachers, when they make their entrance upon the serious business of life at the age of thirty, to be loaded with a burden of debt which paralyses their liberty of action for a long while. It is not yet known in what direction the report of the Examination Committee will go: but probably it will aim only at a modification of the statutes now in force.

(2) **The Probation Year.**—Now that the future teacher has finished his academical studies, he has to pass through that purgatory feared by all, which is called the probation year (*profår*). Probation courses are arranged at five secondary schools in Sweden; these are the secondary schools in the university towns of Lund and Upsala, and three secondary schools at Stockholm. At each of these five schools about ten candidates are received every year. The probation year consists of two successive terms, and comprises two concurrent courses—a practical and a theoretical.

(a) *The Practical Course* is conducted under the general management of the *rektor*, or principal of the school; while guidance in the particular subjects—every candidate must have at least three—is furnished by the members of the staff who teach those subjects in the classes in which the candidate has his practice lessons. The training in each of these three (or more) subjects embraces two distinct stages: auscultation and practice lessons. To this must be added one or two specimen lessons, at which the candidate has to do his best in the presence of the manager, of the ordinary teacher, and of such of his fellow-probationers as are taking the same subject. After attending a certain number of lessons given by an "old hand" in different classes, the candidate is allowed to begin his practice lessons—about fifteen hours in a junior class, and the same number in an upper class. While the practice lessons are going on so-called "preparations" are held every week at which, in addition to the candidate, the ordinary teacher and the manager are present. These two now subject the teaching of the candidate to a severe criticism, and suggest appropriate methods to follow in his lessons. On the whole, the weeks during which the practice lessons are going on are a hard probationship for the poor candidate. As the boys consider it their privilege to make fun of the probationers, he has to exert all his strength in order to maintain tolerable discipline among them. The first lesson is naturally the worst: the boys instantly try to find out how far they may go with the newcomer; and if he does not seize the reins from the very beginning, he will most probably fail ever to seize them afterwards. At the same time, he must always be prepared for a visit from the ordinary teacher or the manager, who come to listen to the teaching and note down the faults they may observe. At the end of the hour, as a rule, they take him aside in order to communicate their remarks to him.

(b) *The Theoretical Course* is under the superin-

tendence of a separate manager, who is usually an expert in "practical" or "theoretical" philosophy, which are much the same as "mental and moral science." The course consists of a series of some thirty lectures given by the manager on educational psychology and general pedagogics: it is closed by an examination of the candidate's knowledge of the theory and history of pedagogics. Moreover, every candidate is under the obligation of writing a short dissertation¹ dealing with some pedagogical subject.

When the candidate has finished his year of probation he receives a certificate issued by the two managers in common, which contains separate reports for each course. The manager of the practical course gives jointly with the teachers in question separate reports for each subject; the report for the theoretical course is given by its manager alone. One inconvenience caused by the arrangement of probationary courses at different schools is the fact that managers and teachers at one school may demand more of the candidates than is the case at another: for instance, the standard is said to be higher at Lund than at Upsala or Stockholm, for which reason most candidates hesitate to undergo their probationary year in the first-named town. There are fourteen training colleges for primary school teachers, but none for secondary.

(ii) **THE SCHOOLMASTER'S PROGRESS.**—When the candidate has got his degree and his training certificate, he is at last ready to enter the service of secondary schools. He can now either make himself enquiries for a vacancy, or he can entrust this task to a scholastic agency in Stockholm conducted by the "Extra-Lärare Sällskap" (which is a kind of "Assistant Masters' Association" consisting only of those juniors who have no security of tenure).

(i.) *Grades of Teacher.*—Naturally, the place the budding teacher may now expect to obtain is not a permanent one: not until he has performed the duties of an additional master (*extra lärare*) or a substitute (*vikarie*) during a number of years may he reckon upon getting a definite appointment as an *adjunkt* or a *lektor*. The length of this time of service as an *extra lärare* may vary considerably: it will depend on such things as the higher or lower certificates (academical and probationary) of the teacher himself, or the number of vacancies for the time being among the ordinary teachers. It ought to be said, however, that, after the school reform of 1904, the prospects of advancement will be better than they have been for a long time. When the new organisation of secondary schools has been carried out it will be necessary to increase the teaching staff by fourteen *lektors* and eighty *adjunkts* (an increase of about 5 per cent.). For the current year the Riksdag has voted supplies for eight new

¹ The following were the subjects thus treated at the Lund School in the year 1903-4: Written and spoken language, with reference to teaching of the mother tongue; school excursions; a decade of school illnesses; the place of the Old Testament in religious instruction; philosophy as a school subject; religious instruction in the lower forms; conversation exercises in English; the treatment of the adverb in school grammars; the teaching of history; school commentary on Pinero's "Gay Lord Quex."

"lektorships" and twenty-six "adjunktships." By such measures considerable strides have been taken towards the solution of the "extra-master-question," *i.e.*, the unhappy circumstance that so many of the younger teachers have to pass their best years in the insecure and ill-paid situation of an "extra master."

(2) *Salaries of Teachers.*—In connection with the recent school reform, the question of teachers' salaries has also found its solution. It is true that the teachers did not obtain the increase for which they had hoped; but nevertheless the result arrived at is an improvement on the previous state of things. The following table shows the salaries for "extra masters," *adjunkts* and *lektors* :

	Rate I.	Rate II.	Rate III.	Rate IV.	Rate V.
Extra Larare ..	2000	—	—	—	—
Adjunkt ..	3000	3500	4000	4500	5000
Lektor ..	4000	4500	5000	5500	6000

The amount is reckoned in Swedish crowns [90 kronor = £5]; and all salaries are paid monthly in advance. The increases of salary take place every five years. As these are in all cases non-resident salaries, they seem to compare unfavourably with the salaries paid in English schools of the same grade. But the cost of living, on the whole, is considerably less than in England: one can, for instance, obtain complete board in a first-rate hotel for about £3 a month; and the common practice of having meals with a family greatly increases the comfort and lessens the expenses of the young bachelor teacher. But in reality the salaries are somewhat smaller than they seem on paper, as the ordinary teachers, *lektors* and *adjunkt* have to give up a part of their annual income to the annual income fund. All teachers are retired compulsorily on attaining the age of 65, on a pension equivalent to about 70 per cent. of the salary which they held at their age of retirement.

(3) *Security of Tenure.*—The "extra masters" are appointed and dismissed—usually in accordance with the recommendations of the *rektor* of the school—by the "Board of Education"; but it is said that arbitrary dismissals are rare, and there is in all cases a right of appeal to the "Board of Education" (*öfverstyrelsen för allmänna läroverken*). Appointments to the position of *adjunkt* and *lektor* (the latter title is limited to persons who have taken the doctorate, and bears a higher salary) are made by the Board of Education, and are made *quamdiu sese bene gesserint*. *Rektors*, who have a salary of 6,000 kr. and house allowance, are appointed for a term of five years by the Board of Education; and when their time is up, they may either be re-appointed or return to the schools where they formerly held the post of *adjunkt* or *lektor*, and on whose books they continue to stand during their rektorship. The presence of a clear line of distinction between "junior" and "senior" "assistant-masters" and the absence of a great gulf (as regards either standing or salary) between "assistant" and "head" masters both appear to work

well, and both may fairly claim to be good results of centralisation. The discrimination between the *adjunkt* and the *lektor*, on the other hand, seems to be a frequent source of discontent.

Finally, it ought to be said, that the school reform of 1904 has put an end to the authority of the Church over the secondary schools by the establishment of the above-mentioned supervisory board with a right to decide in all questions of importance.

SELECTION BY INTERVIEW.

By C. M. STUART, M.A.

Headmaster of St. Dunstan's College, Catford.

ONE of the most instructive "signs of the times" in the educational world at present is to be found in the efforts which are being made to discover some substitute for competitive examination. The University of London has recently granted degrees in science for the production of original work instead of for passing the final B.Sc. examination, and the Admiralty has been selecting naval cadets by causing candidates to be interviewed by a committee of selection.

The reports of these interview committees have been published as Government papers and make interesting reading for schoolmasters; but the prevailing impression which they leave on the mind is that here is another testimony to the excellence of the "handy man," for it is clear that the sailors were the life of the committee, it was they who put the frightened youngsters at their ease and got them to talk naturally. As for the reports of the schoolmasters, dare we whisper that there may be the merest flavour of pedantry about them?

It is a pity that the series cannot be supplemented by the reports of some of the candidates who passed through the ordeal; perhaps, however, some readers may have had the opportunity of seeing or hearing unofficial ones.

It may, I think, be taken for granted that this is a genuine attempt to suppress the special preparation for examination which has been far too common in the past, and as such it deserves every encouragement; the original idea of examination was to find out the extent of a boy's knowledge, and if the matter ended there, there would be no great harm in it. The enterprising schoolmaster, however, soon discovered that a boy who had no knowledge at all might exhibit in the examination a fair imitation of it if he were drilled and taught with reference to that examination only; and hence arose the system of "preparation for examination," a practice which is as pernicious as it is universal. A boy, indeed, ought never to be prepared for examination; he ought to be taught to work for himself, and any work done solely with a view to its reproduction in examination should be unhesitatingly condemned. If he cannot pass any examination without special preparation he will gain nothing but harm in attempting to acquire knowledge for that purpose. It will be interesting to

see whether this new departure of the Admiralty will succeed in causing special preparation for this "Examination by Interview" to be discontinued. I believe myself that in a very short time "Osborne Classes" which will include practice in being interviewed will be openly advertised.

Turning to the published reports of members of the committee, many interesting statements are to be found. There are several complaints about the character of the reports sent in by the schoolmasters of the candidates, and suggestions that they might deal at greater length with the candidates' characteristics. Is this quite fair on the schoolmasters, especially on the private schoolmasters? They have to satisfy the parents of their boys, and if the parent wishes Reggie to enter the Navy the schoolmaster may mildly point out to the parent that Reggie's hopeless incapacity to understand the mysteries of long division, and his remarkable facility in languages, would indicate for him a different career, but if the schoolmaster were to prejudice the boy's chances before the selecting committee he would very soon lose his pupils. A schoolmaster, like a doctor, need not go as far as actual untruth, but he must give his certificates as far as possible in accordance with the wishes of his clients.

Further, it is stated that all schoolmasters ought to be able to answer the plain question: "If this were your own child, would you wish to see him in the Royal Navy? Why? Why not?"

This, however, is not by any means an easy question to answer. "No, for his mother would give me no peace if I suggested it," is an answer which would have the merit of being perfectly truthful in many cases, but it would not be of much assistance to the selecting committee. "Yes, for I think he requires rigid discipline," would, while equally truthful, probably count rather against the candidate than in his favour. In fact, the answer to this question and probably to a good many others would be rather a useful index to the character and circumstances of the man who wrote it than a just estimate of the boy about whom it was written. When education in England has been crushed to the same dead level of uniformity as in France, for instance, the personal equation of the schoolmaster may possibly be eliminated, but that is hardly a consummation to be desired.

Is it possible for a committee in a twelve-minutes' interview to decide whether a boy of twelve and a-half is likely to make a good naval officer? Perhaps not, but they have at least more chance of doing so than under the old system of competitive examination, when it was merely assumed in the true Chinese fashion that the boy who can answer examination questions best will become the wisest man, and the wisest man will make the best naval officer.

The qualifications which would enable a boy to make a favourable impression on the committee are self-confidence and *savoir faire*; these are not bad qualities in a naval officer, and to some extent they might enable him to conceal a want of know-

ledge. It would be interesting to inquire what would be the fate of a boy who was enthusiastic about some pet hobby—motors, animals or butterflies; if he got the chance he might impress the committee with his knowledge on this subject, but would probably appear (by contrast) to be ignorant on other points; such a boy would probably profit by taking pains to be well up in his school work.

All members of the committee lay stress upon the fact that few of the boys interviewed were nervous and shy. This is remarkable, but it may be partly explained by the fact a boy known to be shy and nervous would not be entered for such an interview. With this we cannot find fault, for a nervous man is out of place on a battleship, however suitable he may be for other work. The elimination of the shy boy can do no harm to the Navy, but care will have to be taken if this method of selecting candidates is extended to other professions.

What concerns us most, however, is the possible extension of this system to the selection of candidates for the Army, Civil Service, or various other professions.

It is earnestly to be hoped if the system is adopted that we shall not make the mistake to which the Anglo-Saxon nature is so prone, viz., that of suddenly adopting it, pushing it to its extreme limits and refusing to alter or modify it in any circumstances whatever. If it is adopted, it must be adopted first in a tentative fashion, and it should be worked in combination with other methods of selection and not to the exclusion of them. Consider, for instance, the application of this method to the selection of officers of the Army.

Here the candidates are older, their tastes are more formed and the difficulty of interviewing on general subjects will probably be greater, for although the candidates will not be troubled with shyness, there is a considerable variety of subjects on which they might be able to show more knowledge than their interviewers. At the same time, it will be a great advantage to examiners to know whether a boy can answer questions brightly and smartly, whether he can see both sides of a question, whether he has read with intelligence outside his school work. In order, however, to obtain common ground for all candidates and interviewers, many of the questions would turn largely upon the candidates' school work, and there would be some danger of the interview degenerating into a mere oral examination, but this could readily be prevented by special instructions to the committee on the subject.

In selecting candidates older than naval cadets for the Army or similar professions the things which should be taken into account are three in number:—

- (i) The impression produced at the interview.
- (ii) The candidate's intellectual capacity.
- (iii) The candidate's previous record.

The first requisite has been discussed already, and No. (ii) is judged at present by examination. This examination might still be retained, although less prominence will be given to it than formerly.

We have already spoken of the difficulties of a "previous record" in the case of naval cadets, but this will be an easier matter in the case of older candidates. It may be said, perhaps, that most Army candidates come, and that it is desired that they should come, from "the public schools." Now the public schools have many points in common, and the masters are more exempt from the necessity of pleasing parents than is the case in the private schools. It will not, therefore, be difficult for the public schoolmaster to mention in a boy's previous record his influence among his fellows, whether he has made a good prefect, secretary or president of a school club, or even captain of an eleven.

It will be a great advantage, and it will tend more than anything else to discourage cramming, if the relative value assigned to these three items of selection is not only unknown, but variable.

Some years ago a paper¹ was published on the "Examination Curve." In this it was pointed out that, when marks were taken as ordinates and the number of boys who gained marks as abscissæ, a curve was produced consisting of a short rapidly descending portion, a long almost level intermediate portion, a second short rapidly descending portion. The experience of every schoolmaster confirms this. Any given number of boys will consist of a few clever boys, a considerable number of moderate boys approximately equal, and a tail of "duffers." To select the clever boys and eliminate the tail by examination, interview or otherwise, is a comparatively simple matter; it is when we have to select some and reject others of the intermediate level portion that assistance will be given by different methods of selection. It is desirable to see the experiment tried, and especially to see it extended or modified as experience may suggest.

SCHOOL CADET CORPS.

By EDWARD C. GOLDBERG, M.A.

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II.

THE principle of compulsory military training in schools, of enforced membership of the school cadet corps, which was advocated in the May issue of THE SCHOOL WORLD, has recently received valuable support from a letter of the Headmaster of Harrow to the Chairman of the Lads' Drill Association. The letter has been widely circulated in the hope that "many other schools and educational authorities may be led to adopt the sound principle" therein enunciated, and to follow "the excellent example set by Harrow in carrying it into effect." "Every boy at Harrow," says Dr. Wood, "has to learn to handle a rifle and to pass a standard in shooting. Conscription being at present out of the question, it remained

that every patriotic citizen should render himself fit to act in the defence of his country if necessity arose." The Headmaster of Harrow in effecting his new departure naturally met with difficulties and objections. The critics thought it "would interfere with work," that it "would spoil the cricket and football," nay, they even went so far in pessimistic prophecy as to assert that "it would encourage a military spirit." "It has done nothing of the kind," writes Dr. Wood, somewhat undoing the force of his argument by the equivocation in his dismissal of the last objection. In England, where militarism is either dormant or chauvinistic, where each of us is, in his hours, only a Sancho or a Jingo, the aim of the military training of our boys should be to make all in the future capable of being useful soldiers; and this is, of course, what Dr. Wood means. But it cannot be achieved by the Morris tube, nor even by the "sub-target gun machine," and we should look forward with eagerness to the time when Dr. Wood shall have driven his wedge up to the thicker part, and when he shall be able to write a letter to tell the world that every boy at Harrow is a member of the school cadet corps.

The conduct of the school cadet corps depends for its success on many considerations other than those of financial possibilities; hence it is difficult to reduce the treatment to the dimensions of a short essay, the more particularly as a part of the present article must be devoted to the very important subject of the institution of school corps (non-uniformed) as distinct from school cadet corps. It is, however, easy to see and difficult for me to explain with any semblance of modesty, how important a factor in the success of a corps is its commanding officer. Let me, therefore, at once pass over the enumeration of all those qualities which of necessity help in organisation, discipline, influence, &c., where boys are concerned, and urge the requirement that the commanding officer should have time for his task and unselfishness in devoting that time to his task. In my scholastic Utopia the commanding officer has no school duties other than those involved in directing the training of boys in a military curriculum; but then in Utopia military training forms part of the curriculum of the school. Descending to more actual and pressing conditions, all headmasters will realise the obstacles in the way of a constant provision of assistant-masters who shall be able and willing to undertake duties in the corps, either as commanding or subaltern officers. The remedy for this, which is being rendered less of a difficulty by the spread of the cadet corps system and the consequent production of young men with some knowledge of and liking for military work, is to recognise the necessity of such a qualification in a man who is about to enter the scholastic profession, and to give him opportunities in times other than those of the usual school leisure to exercise his military ability. This can easily be done where all boys are members of the corps, but is impossible under the ordinary prevailing conditions. Boy officers who earn their position by

¹ THE SCHOOL WORLD, July, 1900.

keenness and efficiency are exceedingly helpful in the training of cadets, but as they are continually changing and passing away there must be a permanent, or comparatively permanent, group of masters to form the staff of officers. In some cases masters serve in the ranks, and I believe that this form of pedagogic activity is successful where it exists, but I have no direct knowledge on the subject; and I labour under a personal and instinctive prejudice against the practice. A corps which is provided with good soldierly officers, masters and boys, need not look for further elements of success in government than the assistance of a tactful, energetic, good-tempered and thoroughly efficient sergeant-instructor. He is, indeed, all important to the corps; yet, however good he may be, however potent his influence, no corps is really prosperous in which he is absolutely predominant. The better he is the more he will appreciate this, and the more helpful he will be to the success of the corps. His is a difficult and responsible post, and, as such, deserves good emolument. Unfortunately, such a principle as is implied in the last sentence is often foreign to the ideas of the scholastic world, where efficiency and its opposite occasionally stand on the same financial base. A sergeant-instructor should have a salary of £100 per annum, so that this sum with his existing pension may place him in a position proportional to the duties and relationships which are attached to his post. Above all, he should not be encouraged to look for remuneration or profit outside his duties as instructor. It is a common mistake in schools to make such men more content with their lot by allowing them to depend for additional income on the sale of sundry articles of kit to the cadets.

The chief difficulty in the conduct of a cadet corps under ordinary prevailing conditions is the impossibility of carrying out thoroughly a complete training of all ranks in a reasonable military curriculum, owing to the conflict in the interests and requirements of the school work, the playing fields and the parade ground, rifle range, &c. In this matter the co-operation of the headmaster is the solution of the problem, for it is only by obtaining concessions, such as the interruption of "preparation" and an occasional hour "off" here and there, that a commanding officer can bring his cadets to that general level of efficiency in drill and musketry, and in the cases of the few, in signalling and subservient branches of military science, which it is his responsibility to produce. It is a mistake to suppose that the War Office sets a high standard of requirement in the case of cadet corps. A commanding officer of cadets who has no enrolled members in his command has a very free hand in the training of the boys. He is, of course, responsible to the officer commanding the volunteer corps to which the cadets are attached; but there is, as there ought to be, under the present system of voluntary service, great elasticity in the fulfilment of the conditions of military service: corporate spirit, the natural desire not to appear at a disadvantage in camp, at a field-day,

at inspection, as well as genuine fondness for the work, and elementary patriotism, are the main factors in the efficiency of so many existing public school corps. This efficiency is at once the pride and the burden of the enthusiastic and devoted group of schoolmasters who have found their duty and their pleasure in such a contribution to the national assets.

What takes the heart out of a fine instructor and whitens the hair of the commanding officer is the impossibility to get work done by particular units at particular times. Thus in some schools there is no attempt at infantry training at all in the summer term, and only musketry is performed. The Michaelmas term is for football, the Lent term is for the "sports" and measles, the summer term is for bathing, cricket, the boating and the examinations; yet the corps comes through somehow, and comes through well, wherever the headmaster is willing to let some of the regular school work go by the board, that the aims of the corps may be achieved. Such concessions mean dislocations and irregularity, which are less felt according as the larger number of boys in the school are members of the corps, and would not be felt at all if compulsory service existed throughout our public-school system. Meanwhile, the best method to pursue is for the commanding officer to watch and snatch every available opportunity of getting his course through in scraps and piecing it all together on the few occasions when he has all his units assembled. Thus it is impossible to overestimate the value of field-days and their imperfect lessons and the desirability of much larger attendance at public-schools military camps than at present seems possible.

With regard to the musketry training and use of the miniature range, or perhaps, better still, of the sub-target gun machine, I am strongly opposed to the view that these are the end-all and be-all of the training of our boys. All the Morris tubes in the world will not make soldiers or patriots. The Boer was a good shot and something more besides. The Japanese has not won his victories merely with his rifle. That there should be some recognised scheme of general cadet-training, some definitely laid-down modification of the drill book to suit the majority of cadets and to be the basis of their general efficiency, is an urgent necessity. The Military Training Committee of the Headmasters' Association will, it is hoped, soon present such a body of recommendations as shall not only win the approval of the military authorities, but also be found convenient for the acceptance of all public schools. Pending that, the officer commanding cadets will do well to remember that boys like to act as men, and are quite capable of doing so; that they like "ceremonial" and pick it up quickly; that they like field days better than anything; that they like being "smart" and will recognise the value of precision of movement, as a means of avoiding confusion and inducing readiness of obedience to words of command; that absence of "smartness" means unsteadiness in the field, and that when dealing

with the young we are all apt to underestimate the value of the production of the habit of perfect execution. No one rejoices more than I do at the abolition of the old "manual and firing exercises" on which so much useful time was wasted of old. On the other hand, no one would regret more the introduction of systems of drill which would permit slovenliness and approximation to take the place of smartness and precision.

Before leaving this part of the subject and turning to the vital question of the encouragement of non-uniformed, unattached school corps, it is necessary to say a few words on the subject of cost and care of uniforms, and equipment.

The system by which a corps provides the entire uniform for its members is, in spite of many obvious defects, more convenient and economical than one by which each boy purchases his own kit. The care of clothing and such duties as the disinfection of returned articles, renewals, destruction of unserviceable garments, fitting recruits, &c., are important functions of the sergeant-instructor, who can by exercise of intelligence and systematic habits save the corps funds much expense and the officer commanding much burdensome detail. If a school be on the point of appointing a new instructor, the authorities should be careful to obtain a man who has had good office experience as well as other military qualifications. The cost of uniform varies with the tailor, and it would be invidious to single out any one set of prices, but it may be interesting to know that the following essential articles of kit can be purchased from a good maker at the prices named, which are not the lowest of the market:—

	s.	d.
Privates' drab frock ...	13	6
" " breeches	9	3
" " puttees...	4	0
" " F.S. cap	2	6 (with badge).

The possession of overcoats or capes is a necessity which can be gradually met. Officers' uniform should be supplied from the corps funds.

There are many schools where the expense of uniform debars the authorities from forming cadet corps attached to volunteer regiments, and since their headmasters recognise as strongly as the headmaster of Harrow the necessity of military training in the case of the young, we are confronted with the problem as to what is to be done, ought to be done, to save the wastage of such valuable material as is scattered throughout smaller or poorer secondary schools. Lord Meath, the chairman, and Colonel W. Elliott, the hon. sec. of that excellent institution the Lads' Drill Association, have produced a solution of most difficulties in the report of the L.D.A. for 1904. Desiring to attain the object of their Association—the systematic physical and military training of ALL British lads—they set forth very clearly and cogently certain proposals for the formation and the training of non-uniformed school corps, of which the following are in brief the main outlines:—

(1) Recognition by the War Office should be given to such corps.

(2) School corps as distinct from cadet corps should be formed and affiliated to local volunteer corps.

(3) Free issue of arms and ammunition should be granted in certain proportions.

(4) School corps should be inspected annually.

(5) Officers should be granted hon. commissions and be provided with opportunities of instruction.

(6) The cost of arms, free ammunition (miniature), and instruction of officers should be defrayed from public funds.

The main consideration which should induce the authorities to look with favour on these proposals, apart from general notions of expediency and national insurance (to say nothing of the educational advantages, which would induce the schools to pay their share, and were enumerated in my former article), is very striking. A free issue of arms and ammunition is granted to members of uniformed cadet corps at the larger public schools, composed of the sons of well-to-do parents; whereas no assistance of any kind is granted to poorer boys who wish to carry out the same training in secondary schools. I do not overlook the fact that the former pay terminal or annual subscriptions, and that, therefore, they may reasonably expect some slight compensation from public money. This is no reason why the others should be debarred by the community from obtaining what they cannot give themselves and what it is for the advantage of the community they should obtain.

Now the War Office, as is the large majority of headmasters, is favourably inclined to the proposals of the L.D.A., but in view of the complications that might ensue from dual control, in view also of the fact that some of the headmasters who are in favour of the proposals are unwisely afraid of the War Office control (which we have seen to be very gentle in the case of ordinary cadet corps), the authorities in Pall Mall thought best to leave the matter to the Board of Education. The Board of Education decided not to do anything with the proposals of the L.D.A. Thus private enterprise is left to go ahead, and the present probability is that, if the movement becomes general through private enterprise, Lord Meath, Colonel Lloyd and the Council of the L.D.A. will carry their point, and the Government will perhaps tardily lend its support to a movement on which the destiny of the British Empire may at the present moment be resting. A very moderate request, that the cavalry carbine, when replaced by the new short rifle, should be issued to these non-uniformed corps, has been sent to the War Office, without at present any decision having been made on the subject.

Some of these private non-uniformed school corps, not recognised by Government, are already in a high state of efficiency of drill and (miniature) rifle firing. Others are simply rifle clubs. Now, the miniature range is better than no range at all, and the sub-target gun machine is better than no miniature range, possibly better than

most miniature ranges; but the training of boys must not stop at musketry and the parade ground. It should be the aim of all concerned in the welfare of the non-uniformed corps to get their boys out into the open. The miniature range is a mere repetition of the cramped ideas of home and town life. It should be the aim of all legislation and administration in the direction of the encouragement of these non-uniformed corps to get them into the field and the military camp. In some districts this is impossible, but in most it should be easy to get the boys out "to play hide-and-seek with one another" occasionally, so that they may learn some of the lessons of real war from the muddles and nonsense of mimic battles. Stereotyped attacks and defence over well-known ground are doubtless a poor training for regular soldiers, but they have an immense value with the young; and the lessons of one field-day with blank cartridges and impossible conditions, and completely (from the scientific military point of view) ludicrous result, have a more substantial effect in teaching the youngster to think and act than many hours of firing in the artificial surroundings of the miniature range. It must not be inferred from this statement that I make the error of going against all authority in depreciating the value of rifle practice under artificial conditions. I have had too much experience of its help to do that; but I do take the opportunity of this essay to declare against a tendency to make the range rather than the field the sphere of the activity of the young military learner.

Considering how much of the work of uniformed cadet corps is accomplished without the necessity or the opportunity of getting out of mufti, it should not be difficult for the officer commanding a non-uniformed corps to bring his boys to a high state of efficiency in certain points of infantry training. Let him get his War Office recognition and his arms, and, it may be, his attachment to the local volunteer corps, and there is no reason why such a school corps should not be on an equality, from a military point of view, with the largest, smartest, and most efficient of the public-school cadet corps.

Space does not permit a further consideration as to the need of Government recognition for the work that is done and could be done among the thousands of boys in the elementary schools. The military spirit, which "is not encouraged" in a great public school, exists already among the children of the poor. In so far as it is possible in our complex community of England to have any "fighting caste," they are the soldiers of the country. It remains for those who have the charge of their education to see that the golden opportunities are not carelessly thrown aside of making them, as indeed all the boys of Great and Greater Britain, patriotic and efficient defenders of the Empire.

Lancashire. 128 pp. (Blackie.) 8d.—Another booklet in the series of "English Counties," of which we reviewed the "Birmingham" volume lately. This is as good. In simple language everything is told that could or should interest Lancashire children.

STUDIES IN SCHOOL MANAGEMENT.

V.—THE SUPPLY OF TEXT-BOOKS TO SECONDARY SCHOOLS.

By E. SHARWOOD SMITH, M.A.
Headmaster of Newbury Grammar School.

II.

IN a previous article¹ we discussed and dismissed as unsatisfactory two of the methods most in vogue in schools for the supply of text-books to the scholars. It remains now to deal with the third—according to which the school acts as its own bookseller.

There are in theory many objections to this method such as will readily occur to every reader—the loss caused by surplus copies, the worry and bother of account-keeping, the indignity of dunning for overdue accounts, the immense amount of time and trouble necessitated.

It will be the aim of this article to show that with proper organisation such objections either disappear altogether or become so slight that they are more than counterbalanced by the advantages gained.

The first objection is the most formidable, and doubtless the greatest possible care must be shown in the provision of books. But unless we live a curiously hand-to-mouth existence in our schools, it surely is quite possible to estimate within a very few copies the number of books that will be required in a given term. Once again let it be clearly understood that it is the smaller schools which are mainly dealt with in this article. In very big schools the difficulty naturally is much less.

But even in a small school, say of from 70 to 150 boys, one is perfectly safe in ordering from the local bookseller (if the local bookseller is to be patronised) just *not enough* copies of any particular book to go round. Thus the school is safeguarded against loss in case fewer boys are found, after all, to require the particular book, while if additional copies are required they can always be obtained by return of post from a big firm in London.

This, of course, refers to such books as are in use merely for a specified time. With books like grammars or dictionaries, which are regularly in use every term, obviously there is no possibility of loss unless gross carelessness is displayed.

Even the local bookseller will be quite glad to allow twenty-five per cent. discount off all but net books if large quantities are ordered from him. All that is wanted is just a little care and forethought in the matter.

The next question is—the books having been procured, at what price are they to be sold to the scholars? Obviously they cannot possibly be sold with a discount of twenty-five per cent. unless the school is to lose heavily. Many schools, particularly private adventure establishments (the words are not used invidiously), charge net prices for all books, and doubtless make a handsome profit thereby. In the case of secondary schools, my personal feeling is that such a system is wrong, and causes dissatisfaction among the parents,

¹ The first article appeared in the March, 1905, issue.

even if the profits are devoted to the school library or other institution. The book bill is a very heavy and serious item with many parents, and it is not right to add to their burden.

Moreover, the school can perfectly well avoid all loss if twopence in the shilling is allowed off all but net books. This is perfectly fair: it is the exact price at which the book would be bought from a local bookseller, and the school receives the slight margin of profit which it justly earns for the trouble incurred.

It would be a long business to go into figures here, but it could easily be proved that with a school of, say, one hundred boys, such a system would yield just enough profit to pay the clerk or the "book-manager" and also provide desk-copies for the masters.

But one thing is necessary, at any rate in the opinion of the writer of this article, to make the system work. *All books must be paid for by day boys in cash at once.* Directly accounts are opened for all boys, the difficulties are enormously heightened, and very serious losses may result. With boarders, naturally, the same necessity does not exist, but personally I would have nothing to do with the system without this provision. Of course, one has occasionally in most exceptional circumstances, to allow a short time for payment, but such concessions should be most rigorously limited. In practice, moreover, very little difficulty is found. Parents readily recognise the convenience of the method, and when they realise that the business is not undertaken for profit are quick to fall in with the scheme. But it should be insisted on again and again that bad debts must never be made.

The next question is, who is to be the manager of the books? Well, that very greatly depends. If the school porter, sergeant or marshal, or by whatever name men call him, is intelligent and trustworthy, try him. The little additional wage that he will earn will delight his soul, and the shop-keeping post usually appeals to men of his stamp. Ordinarily, however, whatever may be his trustworthiness, his intelligence is at fault, though one cannot see why under sufficiently careful direction he could not be thus employed.

The careful direction must come from one of the staff, but a fair compensation will, of course, have to be given for this additional burden on an already over-worked back. The time and trouble, however, are found to be surprisingly little after the first week of term if the matter is well organised at first.

In case the school porter is incompetent in the matter, or no such person exists, and in case a junior master does not care to undertake the management—and it should be repeated here that quite sufficient profit can be made adequately to pay for such services—it should not be difficult to secure the occasional services of a clerk for the purpose, just at the time when the work is heaviest.

But again, except in very large schools, once a system of book-keeping is introduced, and large

inroads are made on a clerk's time, the method may easily become ruinous. This is, and must be the crux of the whole thing!

Sufficient probably has been said to answer the various objections outlined at the beginning of this article. There are, however, many other advantages connected with the system which must be enumerated briefly.

First of all, as has been mentioned, "desk-copies" for masters can be procured without expense to the school. Secondly, the delay of procuring books becomes so slight as hardly to be noticeable. Thirdly, the very fact that such a system necessitates careful provision and forethought is in itself no small advantage.

One should know at the beginning of a year what books will be wanted throughout the year, and the only question will be the exact number of copies required. This, of course, cannot be accurately gauged beforehand, and hence the necessity for providing fewer copies than the number estimated, those required beyond being ordered and procured without delay from London.

Moreover, and this is a most important consideration, this method most distinctly reduces the cost of books to parents. There seems absolutely no reason why a boy when he has finished with a book, and has kept it in good condition, should not sell it back to the school. The book then can be resold, a fair brokerage being charged. In practice a penny a book is quite enough: obviously some stamp or mark should be placed in a book when re-sold so as to avoid charges or suspicions of dishonesty.

Bartering for books between schoolboys, moreover, is to be sternly repressed, and the rule is usually enforced that no boy may sell a book to another except through the agency of the school.

Wherever books are supplied free to certain boys, as is provided for in many scholarships, such books should always be returnable to the school at the end of the scholar's career. There is an appalling waste in school books, and the quantity that a boy accumulates in his passage through a school, though possibly profitable to booksellers, is sometimes a melancholy consideration to parents.

However, this point is not urged as an important one among boys, except to prevent buying and selling. In actual practice, when a boy has done with a book he has usually done for it as well, and it is never worth the while of a school to purchase dirty or dog's-eared specimens.

It has been shown, therefore, one hopes, that of the three methods (A), (B), (C), the third (C) entails by far the fewest inconveniences. But it requires the most forethought, and possibly for that reason is less seldom employed than the other two.

A First Reader. By Florence Bass. 1-134 pp. (Heath.) 1s. 3d.—The printing, illustrations, and shape of this book are excellent, and the introduction of occasional script is useful: but we doubt the value of the phonetic marks. Miss Bass's book may be thoroughly recommended.

A SCHOOL FIRE-BRIGADE.

By C. C. CARTER, M.A.
Felsted School.

II.—ORGANISATION.¹

IN discussing the numbers and organisation of the brigade, probably the most useful plan to adopt will be to describe a method which has been found to give satisfactory results in drill and in actual fire-fighting. The appliances consist of a curricule fire-escape extending to 35 ft., a manual fire-engine and indoor hydrants. To work these there are several masters as officers, twelve boys as firemen, and a reserve section of six boys. The twelve firemen are divided into four sections of three men each, and detailed off as follows: one section for the escape, one for the indoor hydrants, and two for the engine. A master commands each section, and the chief officer controls the whole.

The men in a section are numbered 1, 2, and 3. Number 1 is the oldest hand; he takes command of his section in the absence of his officer, or, if his officer is in command of the brigade, in the absence of the chief officer. In the event of any fireman being absent, the fireman next below takes his place; thus, if number one is absent, number two becomes number one and number three becomes number two; number three's place can be filled from the reserve section, if necessary.

The reserve section of six boys serves as a training school for recruits, and furnishes extra men if required. This section drills once a week for about three-quarters of an hour. In these drills attempts are made to give a thorough knowledge of all the appliances, large and small, and a knowledge of the duties of each section. The length of time the recruit remains in the reserve section depends, of course, on the vacancies in the brigade proper. In general, the training time lasts two terms or a year. If a vacancy occurs before he has worked through the course of instruction, he has to continue attending reserve section drills until he is efficient. In this way each boy receives a certain amount of training while young, *i.e.*, when he has not so many calls on his time as older boys. Further, the brigade is never handicapped by having recruits without knowledge coming straight in. The number six is chosen for the reserve section because they can then be divided for drill purposes into two sections of three men each, as are the sections in the brigade.

It will be found of advantage to pick one's boys from as many different houses as possible. There is more chance then of fire information disseminating, more chance too of having one cool head with trained knowledge in case of a fire in any particular house. There is less chance also of several members of the brigade being absent through an epidemic of illness, or being late at an alarm through the call not being heard in a particular house.

Full drills should be held three times a term,

and that number should be the minimum. Drills with individual sections can be held more often, if desired.

TRAINING.

The drills are divided into three parts: (1) the turn-out, (2) escape and life-saving, (3) engine and hose.

THE TURN-OUT.—The method of giving the alarm is by the army bugle-call. Notices are posted that anyone discovering a fire should immediately inform one of the corps buglers. The call which he sounds is taken up as quickly as possible by other buglers, and by this means it reaches all parts of the school in a very short time. The first man to reach the station breaks a glass case, takes out the key and unlocks the doors. Firemen put on their belts, hose-wrenches, &c., and fall in at their places, ready to get away at once. The escape section take the escape, No. 1 at the rear balancing the machine, Nos. 2 and 3 at the sides pushing; the hose and engine section take the rear and off drag-ropes of the engine; the indoor section go straight to the ground-floor hydrant, where their belts, &c., are hung, and get to work at once. A brigade alarm should be given once a term as a stimulus to keenness and steadiness; every encouragement should be given to a speedy and smart turn-out.

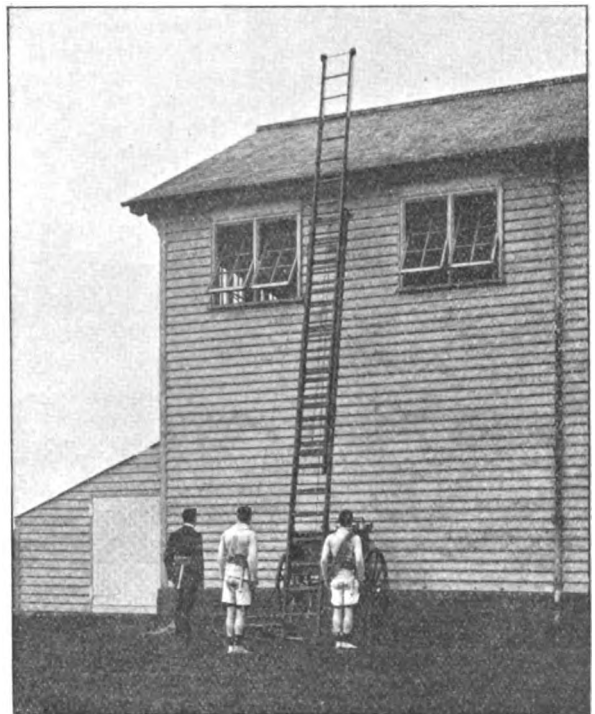


FIG. 1.—Escape Drill—three men—No. 3, on the offside, is ready to mount with the rope.

ESCAPE AND LIFE-SAVING DRILL.—Details of the drill of each section would probably be boring to the general reader. They may, however, be of

¹ The first article appeared in April, 1905 (p. 125).

use to those who have charge of school fire-brigades. Instead of being omitted altogether, therefore, they have been relegated to the end of the article. It will suffice here to give a general idea of what is done with the escape, with the engine, and with the hose.

The life-saving work is the most important, as it is also the most difficult and most dangerous. The best boys in the brigade are therefore put into this section. Each boy must know the drill with the escape thoroughly, not only what he himself has to do, but also the duties of the others. He may be called upon at any time to take the place of either of them. The drill should be gone through also with two men and with one man only, if the escape can be worked by one man alone. It looks easy to see an escape worked by trained men, but to bring it into position, raise, extend and pitch it with speed, requires considerable practice; drills should consequently be held as often as possible.



FIG. 2.—Rescue Drill by means of the Chair Knot. The man at the bottom pulls the person lowered away from the wall.

There is much to be learnt besides the actual use of the escape. Every man must know how to tie and use the chair-knot. The fireman's lift should be taught. It should not be used by boys for carrying people down ladders except as an absolutely last resort; the use of the chair-knot is preferable. It is useful, however, for carrying, *e.g.*, small boys along passages, down and upstairs, or to a chute. Several other knots will be found of great service, the bowline for a loop that will not run, the reef for tying two ropes or sheets

together, the anchor hitch or clove hitch for tying a rope to a bar or post, and so on. There should be plenty of practice in letting oneself down a rope by means of the hook on the belt. They must go down chutes without anyone holding the bottom. They must learn how to enter and search a room full of smoke. Much careful instruction and practice will be required; the escape section, if no other, must be good, as good as it can be made.

ENGINE AND HOSE DRILL.—To emphasise the work of the escape drill does not mean that the engine and hose sections have little to learn or little to do. It merely means that fire-extinguishing is second to life-saving. Obvious as this may seem, it is not always thought of by boys. Every opportunity should be taken to drive the fact home. The escape should always get away before the engine at an alarm.

To get the engine and hose into working order, six men, according to the scheme outlined below, are required. Hence at drills the brigade can be divided into two teams, working one against the other. Competition is a great incentive to quickness and keenness. A drill such as this may be gone through any number of times; each man changing his number each time and thereby getting varied practice. Times should be taken and a record kept. Lengthening and shortening a line of hose, replacing a burst length, adding a second line of hose by using the breaching-piece, laying four or more lengths with three men, should be practised. Hose should be taken up and down stairs, up ladders, over rough ground and over long distances. In the latter case the engine section, as soon as they have got ready the engine, should take hose if required. Similarly vary the practice with the engine. Work with one length of suction from a hydrant, or two lengths with strainer from a pond or canvas cistern.

GENERAL.—Fires may be imagined in various parts of the school, and all appliances brought to bear. Details may be varied as regards wind direction or smoke-filled staircases. They should be attacked, as far as possible, as if they were actual fires. Instructions *re* fire-fighting may be given before, criticism afterwards. Discipline must be strict. There must be no unnecessary talking or noise of any kind. Orders should be given by signal or conveyed by messenger, for shouting causes an appearance of confusion and unsteadiness. Thoroughness in all work is the chief point to be aimed at, but silence, quickness, and the use of wits must be trained as well. Imaginary fires will do much towards developing the last-named.

Appliances need care in the handling. Branch pipes, hose couplings, &c., should not be allowed to bang on the ground. Hose should not be dragged over the ground unless unavoidable. All articles as soon as done with should be returned to their place on the escape or engine. If they have no place on the engine, they should be placed underneath for the time being. It is the only way

to avoid losing the appliances, especially the smaller ones—and they are easy to lose.

To limit a fire is the first object of the attack, to extinguish comes second. Open doors and windows provide air to feed the flames, and therefore all that it is possible to reach should be shut. Every effort must be made to reach the actual seat of the fire. Once this has been found, half the battle is won. Damage from water is often as great as damage from fire, hence every drop must be made to do some work. The stream should be directed at the highest point of the burning material; the water will then do more work as it falls. In smoke the head should be kept close to the floor. Even when the smoke is so dense that one cannot see across a room, there is frequently sufficient air for breathing for six or eight inches from the floor. A lantern is a good guide; as long as the flame burns, there is sufficient air; if it goes out, the fireman should retreat immediately. A wet handkerchief or piece of woollen held over the mouth acts as a fairly effective filter, and a rope tied to the belt on entering will show the way to return. No man, however, should be ordered to a dangerous place on duty alone. Such are some of the points which may be given by way of instruction, and acted on as far as possible in these imaginary fires.

There is always something attractive about fires, particularly to boys. Now and again a short lecture may be given, perhaps with lantern slides, after lock-up in the winter. The history and development of fire brigades and fire appliances can be made interesting. The ways in which fire alarms are given in our great cities are many and wonderful. There is food for several lectures in the organisation, training and equipment of the London Fire Brigade. Many lessons can be derived from some of the great conflagrations of recent years. The brigade will do their work no worse with some knowledge of pumps with special reference to the mechanism of a fire engine, and to this end probably apparatus in the school laboratories will help. Demonstrations in knots and knot-tying will give information useful not only in fire brigade work, but in ordinary life. A knowledge of ambulance work will be useful for all time. In such ways stimulus may be provided in the winter months. In summer competitions and displays may be arranged. Perhaps even a visit to a good fire-station may be made.

The great difficulty will be the absence of much, if any, actual experience. All one can do is to provide oneself and one's men with a certain amount of theoretical and practical knowledge, keep all gear in first-class working order, think out how fires in various places may best be attacked, and then rely on common sense. Much help may be obtained from books, and hence a few, which have been found useful, are named below. Every opportunity should be allowed to attend outside fires within a reasonable distance. Not only can one thus help a neighbour and often save great expense and inconvenience, but much good comes of even a small experience. However, whether actual experience is obtained or not, a fire

brigade on the spot is to a certain extent a guarantee of safety to the school in general. To the firemen themselves there will accrue some knowledge of life-saving and fire-fighting work. This certainly will not be valueless, and it may at some future time be of the greatest consequence.

BOOKS, ETC.

"Fire Protection." By Captain Shaw. Published by Layton. 5s.

"Fires and Fire Brigades." By Captain Shaw. Published by Clowes. 2s. 6d.

"Fire Prevention and Fire Extinction." By Braidwood. Published by Bell. 5s.

"Fire Protection of Mansions." By Merryweather. Published by Merryweather and Hatcher. 2s. 6d.

"National Fire Brigades' Union Drill Book." Published by Stent (Guildford). 1s.

"Fire Brigade Drills." Published by Shand, Mason and Co. 1s.

"Rules for Volunteer Fire Brigades." Published by Shand, Mason and Co. 1s.

"Works Fire Brigades." Published by Shand, Mason and Co.

The Publications of the British Fire Prevention Committee (1, Waterloo Place, Pall Mall), and the "Fire-Call," "Fire and Water," and the "Fireman."

DETAILS OF SECTION DRILLS.

The following are the bases on which drills are arranged for a section of three men, of whom number one is the chief:—

ESCAPE DRILL.—In running, No. 1 is at the rear balance ing the machine, numbers two and three on the near and on sides pushing. In raising, &c., number one remains at the back-fly, gives the order "stop" when the ladders are sufficiently extended, and directs the pitching of the escape. No. 2 raises and stays back-fly on near side, goes to raising handle and so brings the escape to an upright position. No. 3 raises and stays back-fly on the off side, and when ordered extends ladders by means of the extending handle. The escape is then pitched against the window or roof, and the wheels blocked. Nos. 1 and 2 mount, No. 3 remains at the foot of the escape.

ENGINE DRILL.—No. 1 works at the rear; he takes off the hydrant cap, screws on the stand pipe to which he couples the suction pipe. He then turns over the near-side levers, if not already done by No. 2, and stands by to unlock the levers. No. 2 mounts the engine and serves hose and other gear wanted; he then gets down and turns over the levers, if not already done, beginning with the near side forward lever. No. 3 locks the fore-carriage, takes off the drag-handle, and places it under the engine, takes out the suction pipe from the off side-pocket and couples it to the engine; he then turns over the offside levers, if not already done. All three men finish at the near-side levers, and take hose if more is required. If working from a pond, No. 1 takes second length of suction and strainer or the canvas cistern, if working from that instead of the standpipe. The turning over of the levers is made interchangeable, for No. 2 may have much or little gear to serve. No. 2 is responsible that all gear is properly stowed after drills.

HOSE SECTIONS (Indoor Hydrants and Engine with three 50-ft. length of hose). No. 3 takes the first length and runs it out, grasps the end of the second length as No. 2 runs past him, makes his couplings and springs to attention. No. 2 runs out the second length, grasps the end of the first length as No. 1

runs past him, makes his coupling and springs to attention. No. 1 first of all couples the first (*i.e.*, No. 3's) length to the engine or hydrant. He then puts the branch pipe through his belt, takes the third length, runs it out and screws on the branch. No. 2 should not run his length out until No. 3 has uncoiled his length and is ready; similarly for No. 1. The coils should be held by the lugs, and allowed to uncoil as the fireman runs forward; it should not be rolled along the ground, for the former method is not only much quicker, but is the only possible one in certain circumstances, *e.g.*, in going upstairs.

In the make up, in all the drills each man makes up what he has got ready, only working the reverse way.

NOTE.—The photographs illustrating this and the article in the April issue have been very kindly taken by my colleague, Mr. J. H. Franklin.

SECONDARY EDUCATION IN DERBYSHIRE.¹

THE maxim, "Think for yourself," is, in general, a very good one, but in affairs of grave responsibility is frequently dangerous; and in nothing is this so noticeable as in educational administration, where "Call in the expert" is a much safer rule. The book before us is a consequence of the action of the County Council of Derbyshire, for whom Prof. Sadler and his colleagues made a detailed educational survey of the county under their administration. Although, on the face of it, the report would seem to have interest for those alone who are associated with education in Derbyshire, this is far from being the case. It may be regarded as a kind of text-book for all educational authorities, a text-book wherein the theory is reduced to an absolute minimum (chap. iii.), whereas the greater portion consists of "model solutions" and "worked-out examples" of educational problems (chaps. iv.-xi.). The estimate of expenses in chap. xii. should also be of great service. Inhabitants of agricultural districts like Derbyshire are so accustomed to obtain profits within a period of twelve months that they are apt to expect the same results in matters connected with education. The whole tenor of Prof. Sadler's report combats this mistaken idea.

The first noticeable point is the strong and well-argued indictment against the present Higher-grade Elementary School Minute, and the comparison between the treatment of schools of this kind in England and Scotland. As is pointed out, if the Board of Education could be prevailed upon to change this Minute it would greatly benefit education in industrial and agricultural centres, where a four years course, from 12-16, in a higher-grade school is a moral impossibility; whilst a course at a secondary school would be useless as well, when the future career of the pupil is considered. A suggested plan for a higher grade elementary school curriculum for *three-year* courses (ages 12-15) is given which seems correct enough, though some people will be surprised to find no

mention of chemistry in the first two years' general course. In fact, the whole trend of the report seems to be an effort to prevent the "swing of the pendulum" from going too far over on the side of "schools of science," for fear of the return swing being too violent. Thus, whilst chemistry is absent, practical physics is advised, and great stress is laid upon "clear expression in the mother tongue." Here Prof. Sadler will surely have everybody with him; though many will not agree with the stress, almost as great, that he lays on history and geography. These subjects are to develop more especially "a sense of civic and national duty." Surely this is better and more surely developed as an outcome of the "*esprit de corps*, self-control and willingness to co-operate for a common object," which are to spring from organised school-games; these, together with carefully graded physical culture, are strongly advocated. For loyalty to one's captain and one's school is not far removed from loyalty to one's employer, king and country. But how physical culture is to be crammed into the already overflowing time-table imposed by the Regulations Prof. Sadler does not state. As for geography and history, in the hands of a good teacher and for the class of pupil considered, probably the best text-books would be (i.) a survey map of the home district with an out-door class; (ii.) perhaps another of the county on a smaller scale; (iii.) Bradshaw's railway guide and the supplement to Whitaker's "Almanac": for history might be substituted, with advantage, the reading of historical novels, parts of these being written out from memory as an English composition test, thus combining pleasure and profit.

The recommendations as to salaries of assistants, on p. 43, is, at first sight, excellent; but what is to become of the junior at the end of five years' service? An appendix containing the full curricula of fifteen public secondary schools in Derbyshire should be very valuable.

Altogether a most opportune book, and one that should be on the bookshelf—or nearer at hand than that—of every educational authority.

THE ZOOLOGY OF THE VERTEBRATES.²

IT was the original intention of the author of this bulky volume to complete his work on zoology in two volumes. He has, however, been well advised in departing from this plan, and in relegating the Tunicata, Enteropneusta, Echinodermata and Arthropoda to a third volume, which is already in the press, and may therefore be expected ere long.

The arrangement of the book is that which is usual in similar advanced treatises: a concise definition of each group, phylum and order precedes the respective detailed descriptions of the animals

¹ "Report on Secondary and Higher Education in Derbyshire." By Prof. Michael E. Sadler. 192 pp. (Bemrose.)

² "A Student's Text-book of Zoology." Vol. ii. Amphioxus, Vertebrata. By Adam Sedgwick. xv. + 705 pp. (Swan Sonnenschein.) 21s.

concerned. The general style is terse and succinct, as indeed is almost necessary in the bare emuneration of the hosts of facts to be recorded. Nevertheless, at intervals, Mr. Sedgwick launches out into the waters of biological theory with bold, incisive stroke. We note that on these occasions he adopts a critical, but at the same time frequently non-committal attitude; the *pros* and *cons* of many debatable points are put forward with frank impartiality, while we are left in no doubt as to the writer's own opinion on many topics where we welcome the guidance of the expert. The effect produced upon the reader is eminently stimulating; and we can well imagine many a student, or, for that matter, teacher, being fired with an enthusiasm for research as he reads some of these admirable discussions. We are a little surprised to find the lampreys and their congeners included among the true fish; though whether the Marsipobranchs are, or are not, Fish, depends entirely upon how Pisces are defined. It appears to us more satisfactory to place the Marsipobranchs apart from the Pisces rather than to be obliged to insert "except in Marsipobranchs" repeatedly in describing the latter class. Mr. Sedgwick justifies his decision by appeal to the character of the respiratory and vascular organs, which are undoubtedly piscine. Some zoologists, at any rate, do not consider that these resemblances outweigh the differences that exist between these animals and fish in the restricted sense. But this, as indeed all classification, is a subjective matter. The treatment of the various groups is not uniform. As is befitting, in view of both its structure and of its development, Amphioxus receives a full and detailed description in which are incorporated all the most recent results of researches upon this interesting little animal. In the other groups it is the order as a whole rather than any individual type that is presented, while the developmental phenomena are dealt with but shortly, or entirely omitted.

There are over three hundred illustrations, many of them old friends, but others, to the best of our belief, appearing for the first time in text-books. Indeed, the whole volume strikes us as the most up-to-date text-book of zoology in the English language, and we heartily recommend it to every teacher and senior student who has passed through the elementary courses of zoology and is capable of appreciating the refinements of advanced work.

The Rivals. xiv. + 102 pp. *The School for Scandal.* x. + 110 pp. *The Critic.* x. + 70 pp. With introductions by Edmund Gosse. (Heinemann.) 6d. each net.—While Sheridan has often been reprinted of late years, we recall no edition so elegant and worthy of attention as this. The type is admirable. Mr. Edmund Gosse was perhaps the inevitable selection to write introductions to these immortal eighteenth-century plays. At any rate, it would have been impossible to give the work to more competent hands. Consequently, in prefatory notes which are extremely brief, we have literary estimates of Sheridan's work from the pen of a master of the craft, and these enhance the value of each play considerably. No praise can be too high for these dainty little volumes.

THE COST OF BUILDING, EQUIPMENT AND MAINTENANCE OF SECONDARY SCHOOLS.¹

THE Board of Education's recent Regulations for the Training of Pupil Teachers will necessitate the opening of many new secondary schools, both in London and in other large centres of population, and in the smaller towns which make convenient centres for country districts.

The executive committee of the Association of Headmistresses has, by desire of the Association, collected from numerous secondary schools statistics as to the present cost of secondary education for girls. A pamphlet² dealing with the salaries of assistant-mistresses in secondary schools has been published by the association; and it has been thought that a short paper dealing with the cost of building, equipment and maintenance of schools of different sizes may serve a useful purpose now, when education committees are employed in organising secondary education.

The subject presents itself in two main aspects:—

(A) INITIAL COSTS.

(B) YEARLY OUTLAYS.

Under (A) there would appear:—

(a) Original price of site.

(b) Price of building.

(c) Price of furniture and fittings:—

(i) General School Furniture and Apparatus, including fittings of cloak-rooms and lavatories; desks, tables, chairs, black-boards; shelving and cupboards; gymnasium fittings; furniture for Headmistress's office and assistant-mistresses' rooms and library; fire apparatus.

(ii) Special School Furniture, &c., viz.: science, art, music, domestic and workshop equipment.

(iii) Books to form nucleus of library.

Under (B) there appears:—

(a) *Upkeep*:—

(i) Of Building:—

(a) Painting and repairs, and depreciation allowance.

(These would vary from year to year.)

(b) Insurance premium.

(ii) Of Furniture and Apparatus:—

(a) Depreciation allowance, or renewal and improvements.

(b) *Public Burdens*:—

(i) Rates } No general statement could be made. This
(ii) Taxes } could always be settled in individual cases and
 } any general statement would only be misleading.

(γ) *Working Expenses* (non-educational):—

(i) Office salaries, Auditor's fee, &c.

(ii) Stationery and postage.

(iii) Heating, lighting and water.

(iv) Cleaning materials.

(v) Household wages.

(vi) Advertisement (if any).

(δ) *Working Expenses* (educational):—

(i) Salaries of mistresses (without extra fees):—

(a) Head.

(b) Assistants.

(ii) Examination and inspection.

(iii) Prizes (if any).

Obviously, it is impossible to make a general statement as

¹ A pamphlet issued by the Association of Headmistresses on "The True Cost of Secondary Education for Girls."

² Reprinted in THE SCHOOL WORLD, February, 1905.

regards A (a). With reference to A (b), the Regulations of the Board of Education for Secondary Schools, defining the requisite floor-space per pupil as 18 square feet, must be borne in mind. An interesting calculation has been furnished by an expert, showing how the approximate cost may be worked out theoretically, given certain data, and showing that in London the present cost per pupil for the building alone is probably rather over £50. The calculation for the total floor-space per pupil is made as follows:—

	Sq. ft.
Class-room	18
Hall	8
Lecture theatre, art room and laboratory ...	7
Cloak-rooms, &c.	4
Dining-room (allowing for only 20 per cent. of the pupils)...	2
Library	2
Teachers' rooms	2
Kitchen, caretaker, &c.	2
	—
Total	45
Added for walls and corridors 30 per cent. ...	14
	—
Gross total per pupil	59 sq. ft.

Measuring externally from the footings to half way up the span roof, we take a height of 38 feet for a two-storeyed building, or 19 feet per storey. This assumes that the site affords a good foundation, so that the footings are not unreasonably deep, and includes for each storey the height of the room, the thickness of the floor, a quarter of the height of the roof and half the depth of the footings. To find the cubic contents to be priced per foot, take the total floor-area per pupil and multiply by 19. According to the plan of the building, as regards the height of the hall and the position of certain smaller rooms on a mezzanine floor, the estimate can be modified. If we deduct one square foot per pupil for the mezzanine rooms, and add 75 per cent. of the hall floor-space, we get an area of (59 — 1 + 6) square feet = 64 square feet. Then the cubic contents will be 64 × 19 cubic feet = 1,216 cubic feet. Pricing this at 10d. per cubic foot, the result is £50 13s. 4d. per pupil. This does not allow of any expensive fittings at London prices. It is exclusive of the cost of site and of enclosing the playground, but it should cover the heating, lighting and drainage work.

By making certain omissions, such as an allowance for the library and providing less space for the science and art rooms, the reduction made would lower the cost to about £42 per pupil. If a higher standard of building and equipment be adopted, the price may rise to over £100 per pupil.

For example, the estimate for the buildings for an important first-grade school in London was recently calculated to be between £105 and £110 per pupil. Another school-building, very fully equipped, has cost about £109 per pupil. We understand that in some country districts the Board of Education's requirements would call for an expenditure of about £75 per pupil.

We are, however, of opinion that the provision on this ample scale of 18 square feet in the class-room is not necessary, and is somewhat excessive where there is also adequate provision of hall and laboratory.

Regarding A (c), information is not readily obtainable, the majority of schools now in full working order having been furnished many years ago, and replenished at intervals. We give the following, as a rough estimate founded on facts supplied by a recently established London school:—

	Per Pupil.
	£ s. d.
¹ General school furniture	4 4 0
Special school furniture—	
² Science	19 9
² Art	2 10
Domestic	12 0
	—
Total	£5 18 7

Contrasted with the above, we have the following set of figures from a country school where a local carpenter was available:—

	Per Pupil.
	£ s. d.
General school furniture	2 14 8
Special school furniture—	
Science	2 9
Art	4 6
Domestic	1 5
Workshop	6 0
	—
	£3 9 4

The conditions under which the furniture for this particular school was made, though peculiar, are probably not unique, and the method may serve as a suggestion for similarly placed schools. We also have an inclusive estimate from a country school for £4 10s. od. per pupil.

As regards B (b), Working expenses (educational), the appointment of a headmistress before the school is ready for occupation will, in many cases, ensure economy in equipment. The presence on the committee of an expert of several years' practical teaching experience, and with an intimate knowledge of the necessary educational and hygienic equipment of a school, goes far to prevent useless expenditure.

The committee assumes that the conditions recommended by themselves for girls' schools prevail, and that lessons are given only in the morning, and that one teacher, including specialists, is allowed for every twenty pupils. If teaching be regularly given in the afternoon too, the same staff would serve with necessarily larger classes, or the staff would have to be increased. Four "lessons" per morning, making an average of twenty per week, are considered sufficient for each teacher, seeing that time must be allowed for the preparation of lessons and the correction of papers. Mr. Fabian Ware, on "The Prussian Teacher of Modern Languages," in *Special Reports on Modern Language Teaching*, p. 546, states that in Prussia—

"In hardly any school is the teacher allowed to give more than twenty lessons a week. Nobody can accuse the Germans of possessing less power of endurance than the English, and yet it is considered by the former that a teacher of modern languages cannot exceed this number of weekly lessons with any chance of success. The general opinion is that even this number is too great; and I was informed that probably, owing to the representations of many experts, it would in the near future be reduced to eighteen."

In calculating the staff needed in schools of different sizes it is assumed that these considerations are regarded, and that importance is attached to the individual work done at home by the pupils and examined by the mistress. Visiting mistresses' time is represented by fractions of a week, e.g., a mistress giving two days a week would reckon as two-fifths of a teacher.

¹ No allowance made for pianos for the music rooms, but an instrument for the hall included.

² Estimating that only 75 per cent. of the pupils take these subjects.

School numbering.	Staff required.	Cost per Pupil for Assistant-mistresses only.			Cost per Pupil including Head-mistress.		
		£	s.	d.	£	s.	d.
100 (Type 1 : ages 7-16)	Headmistress and seven assistants, plus portions of time equivalent to one more ...	12	0	0	15	0	0
100 (Type 2 : ages 12-16 only)	Headmistress and six assistants, plus portions of time equivalent to one more ...	10	10	0	13	10	0
200	Headmistress and ten assistants, plus portions of time equivalent to two more ...	9	0	0	11	0	0
300	Headmistress and fifteen assistants, plus portions of time equivalent to one more ...	8	0	0	10	0	0
400	Headmistress and twenty assistants ...	7	10	0	9	5	0

And so on in proportion, at twenty pupils per full-time teacher.

Adhering to the recommendations already given in the leaflet on "Salaries of Assistant Mistresses," the Headmistresses' Association would make £150 the average salary of the assistants.

The salaries allotted to headmistresses ought not to fall below £300, non-resident, however small the school, with provision for increase. The minimum salary of a headmistress of a school numbering 200 pupils should be £400; of a school of 300 pupils, £600; and of a school of 400 pupils, £700. The Headmistresses' Association considers that it is for the benefit of the whole teaching profession that there should be some prizes in it, even though these may be but few in number. It is much to be desired that these should be increased, as they add greatly to the attractiveness of the profession. At present the salaries of non-resident headmistresses of public schools, roughly speaking, range from £200 (with a very few of £150) to over £500 a year (with a very few of about £1,000).

The committee approves of the growing practice of creating large schools, and expresses its approval of the system of paying the headmistress partly by capitation fees, because (1) it is important that in a public institution at least one official should be personally concerned in the maintenance and growth of the school, and (2) a reduction in numbers is followed by an automatic saving to the school finance.

THE EDUCATION OF PUPIL TEACHERS IN SECONDARY SCHOOLS.¹

By CAROLINE E. RIGG.

Headmistress of the Mary Datchelor Girls' School, Camberwell.

WE are to consider the curriculum of secondary schools in special relation to the education of those pupils who will eventually take their place in the world as elementary school teachers.

Let us first of all look at the needs of these probationers during the period before they enter on their pupil-teachership, and become in some way or other "half-timers," giving half of two years to the continuance of their education and half to the practice of teaching in an elementary school. At present we have these probationer-scholars for two years, and they have come to us for the most part straight from elementary schools

or pupil-teacher centres, at from fourteen to nearly sixteen years of age. After a while we are to have them brought under secondary school influences at a much earlier period—at about twelve years of age—and then the problem with which we have to deal will presumably be an easier one.

What, then, is the condition of the girls we are at present receiving into our schools? What are their needs? I can myself of course only speak for London—there must be great differences in different parts of the country. Several facts have struck me much about the London probationers with whom I have been brought into contact. In the first place, they are, with very few exceptions, earnest, steady, well-mannered and well-conducted; they usually mean work and their *moral* speaks in very high terms for their old schools; they realise the importance of putting forth effort, they have an object in view and a worthy one, and they work quietly and steadily towards it. So far we have not at Camberwell found their presence affect at all injuriously the tone of our school; on the contrary, their earnestness and dignity of bearing have been a distinct help to us with some of the more flighty of our own girls in the middle part of the school. Another characteristic very pleasing in them is their affection for and pride in the schools from which they have come. This feeling of loyalty is one we should do all we can to cherish, while at the same time we hope to awaken it after a time for their new schools also.

But intellectually, these probationer-scholars are, as a set, far behind secondary school girls of the same age who have been kept steadily at school for the usual number of years. Their knowledge of mathematics is poor; a good many of them have done no algebra, a still larger number no geometry, and—what is much more serious—their arithmetic methods are cumbrous and mechanical, and they have not, and at first have no desire to have, any real knowledge of the reasons underlying the methods by which they work. There are exceptions, *e.g.*, we have a fair number who are doing very well in elementary algebra. But we find scarcely any of them really good in arithmetic or capable of dealing with a simple "rider" in Euclid.

Of English literature they know scarcely anything, and their power of expressing themselves is as a consequence considerably below what it should be at their age. They have read little and have not much taste for reading what is really worth while. Needless to say their knowledge of the grammar of English is very limited, and the want of power to think which shows itself in their arithmetic work comes out here also.

Of history they have but a smattering, and their interest in the subject has yet to be aroused; for they have been taught bare outlines, and the unclothed skeleton of history presents no charms.

As to foreign languages—well, many of them will tell you they have "learnt French"—and a few of them have done some very fair work in the language. But in too many cases one wishes they had not touched it at all; it would usually be far better to start with girls who had never in their old schools seen or heard a word of French. Here again, too, to say nothing of the kind of accent they have acquired, the want of grammatical knowledge and of power to express themselves in their own language adds to the difficulties of the French work. Quite properly, and I think mercifully for us, they have not attempted any other foreign language. Thus, on starting them with Latin or German, one has a fair field.

To the elementary science work in physics, chemistry and botany, they take kindly enough—as indeed do most young people: such work appeals to the natural desire to be *doing*, to the practical instinct strong in most healthy and active children. But here the difficulty is that the vast majority of these girl probationers have previously done scarcely any prac-

¹ Abridged from a paper, "The Curriculum of Secondary Schools in relation to Elementary School Teachers," read at the meeting of the Headmistresses' Association, June 3, 1905.

tical science work. They have had good demonstration lessons, which they have followed with interest, and from which they have brought away some facts of science; but, owing to the great size of the classes in the elementary schools and the scarcity of teachers, they have hardly done any practical laboratory work themselves, and they are, as a consequence, bungling and awkward in their use of apparatus. Their drawing, too, is poor. In this respect they are much below the girls of the secondary school, and unhappily their unskilful and untidy work tends to lower the standard of the classes in which they are placed for laboratory practice.

Unfortunately also, this want of hand and eye training manifests itself again in the studio. Here again there are striking exceptions; some have been very well taught, others quickly develop taste and skill in drawing. But with a great many one has to begin at the beginning in art work.

Now it is clear that the curriculum of a good secondary school is just what girls with these defects of earlier training most of all need, and it is interesting and gratifying to notice how quickly they improve when they have once given their minds to the new course and have learnt how to tackle their work. For at first they have to be taught how to learn, how to read, how to take the gist, the essentials, of a book or a passage, how to get at the thought, how themselves to think. What, then, should this curriculum include if it is to serve the special needs of these girls?

In the first place, to give breadth to the mind and to touch the emotions to finer issues, we want for them the great culture-subject, literature, as much as ever we can get of it. We need to seize every opportunity to encourage a taste for good reading. It is not possible to over-estimate the importance of this part of our great task. It touches the moral as well as the intellectual nature, it refines and humanises, it trains taste and the sense of the beautiful, it widens the area of knowledge and enlarges the outlook upon life, while it adds immensely to its interests; it is the great means of cultivating the power of expression, while at the same time it is indirectly the means of conveying knowledge of all kinds in the most interesting of ways.

In the second place, we want for these pupils of ours—in order to give exactitude as well as breadth—thoroughly good reasoned-out arithmetic, with short, sensible methods of working and a real grasp of principles, and along with it, worked side by side with it, as far as may be, good elementary algebra. We want also an immediate introduction to geometry, *reasoned* geometry, not merely practical geometry; though, for the sake of hand training and facility in using instruments, we need to have the latter co-ordinated with the former.

In the third place, there comes the question of foreign languages. Here, again, we must all feel that the kind of mental effort requisite to make a foreign idiom one's own, so that our minds can be really touched by the minds of those to whom it is or was native, affords one of the most valuable kinds of intellectual training.

Fourthly, the practical training in the habit of inquiry and research, which the work of the science laboratory affords as nothing else can, is a training which we have special facilities for giving under the highly trained science teachers who are more and more coming to be at our disposal, while it is also one which, perhaps because of some inherent bent in these girls, many of whom are the daughters of artisans, is better suited to call forth the powers of some than literary studies are.

Fifthly, we must also give them artistic training; training of hand and eye and the sense of beauty at one and the same time. While many of the elementary schools for boys have done this in the past, somehow or other those for girls have too often found the task too great for them. We *can* do it, not only in our studios and drawing-classes, but in the science laboratory and

especially in the botany classes, and we shall do well to be as inventive as we can in discovering ways of requiring work of this kind in as many directions and in connection with as many subjects as possible.

It is in these five directions especially, in our teaching of literature and history and the stimulus we can give to a taste for good reading, in our mathematical work, our teaching of a foreign language, our teaching of science through individual practice in the laboratory, and our possibilities of developing the artistic faculty, that our power for good lies in regard to these girls; and, fortunately, our power fits in with the especial needs of the girl who is to be an elementary school teacher, whether she come originally from an elementary or from a secondary school.

On the other hand, there are perhaps certain directions in which we need to add to our resources, if we are to do what is right by those who are to become the teachers of the girls of the masses of our people. Geography, needlework and class singing are essentials in any course laid down for girls who are to do this kind of work; and somewhere or other, probably towards the end of a girl's time in the school, there ought to be a course of sensible practical lessons in hygiene.

Geography has frequently in secondary schools been greatly neglected. Taught, as it has so often been taught in the past, as a mere mass of incoherent facts, it has deservedly fallen out of repute with many thoughtful teachers. On the other hand, those who feel how great a subject it really is, how, properly treated, it is found to embrace within its arms many sciences, have often come to feel that it is too vast to deal with, and that, since to do it properly in a school course seems impossible, it is best to leave it alone. That is an objection which might be urged against other subjects also, and just because it does touch so much else and can be made so much of a *thinking* and a *mind-training* subject, geography is one of the most useful for these girls to study, and for them afterwards to be able to present in a right way to the children who will come under their care.

Needlework, again, surely all these intending teachers of the so-called "working" and small shop-keeping classes should learn, and learn thoroughly; learn not only to cut out and make all such simple articles as working women will need for themselves and their children, yes, and men's shirts too, but learn also all kinds of mending, and learn, too, to knit; but for the teaching of all this we want experts, as I think we also want experts for geography teaching. In both these subjects the elementary schools have already laid for us, as a rule, a very fairly good basis, and upon their satisfactory foundation it is for us to put the superstructure.

As regards class-singing the material afforded by these girls from the elementary schools is really excellent material to work upon. They already sing easily and naturally, and they quickly acquire a knowledge of the theory of music. In connection with singing, one cannot help feeling how seriously one needs to attend to the matter of both accent and voice-production. There is nothing so vile, for example, as the cockney accent; nothing so irritating as mumbling and indistinct enunciation, nothing so fatal to one who is to teach as a wrong use of the voice-organs. It really seems as though a teacher who thoroughly understands the principles of phonetics and the proper use of the voice were a necessity in schools in which any considerable number of the pupils intend to take up the teaching profession.

I have spoken of a course of study which should aim at thorough work in English, afford as wide an acquaintance as possible with our literature, and should include sound work in really good arithmetic and elementary mathematics, in geography and history, in at least one and probably two of the experimental sciences approached practically and rationally, in drawing, needlework, class-singing, phonetics and voice-

production, and should also include one modern foreign language, presumably French, because it is our habit to teach that all through our schools, and because in a good many cases probationer-scholars, whether drawn from elementary or secondary schools, will already have entered upon the study of that language before they become probationers.

The question, of course, arises whether Latin or a second modern foreign language, German, should be taken up by these girls, or even both these. The large majority of them could quite well take up and carry to a very useful point the study of Latin, and it would be a pity not to let them do so. They would get a kind of mental training out of it that they can never get out of French, and even if they had no more than two years' work at it, the knowledge they would acquire would be considerable, since they would start it with us and would have no indifferent teaching behind them to hinder them in their work, and that knowledge would prove of the greatest help to them in understanding both English and French. Hence, I should like to teach most of these girls Latin. Moreover, as we get the probationer-scholars, or those who will become such, earlier into our schools, and as our own girls are induced to join their ranks, there will come to be more and more of them perfectly well able to do good work in Latin as well as in French. Not only so; there will also be a few who might even with advantage, in addition, take up German, while there will be others who might substitute German for Latin or French, more especially those whose bent is towards science. On the other hand, there will always be a good many, and at first that number will be greater than later on, who will do well to attempt no more than *one* foreign language and for whom there are other matters better worth their attention, especially as many of them will work in schools for infants.

Such a curriculum as has been under our consideration is well within the powers of the secondary school to provide and to do good work with, even in the limited period of three or four years, in the case of these thoughtful, earnest girls who have a definite work in view, and thus have a strong incentive to put forth effort.

Another question, however, lies before us. What is to become of the girls at the end of their probationership? Are they to leave our secondary schools to go to pupil-teacher centres or to schools which until recently were pupil-teacher centres, but have become secondary schools with a largely preponderating pupil-teacher element? I think we should all deprecate that. The desirable thing undoubtedly is that the secondary school which has these girls when probationers should keep them on till they pass into the training college for teachers. It is desirable for the girls themselves, it is desirable also for the schools, for many of these girls will in the end prove very good pupils, and it would be grievous to lose them at from sixteen to seventeen years of age. It is, then, to be hoped that we may be able to devise some organisation by which to retain them within our schools after their probationership is out; that is, after they become "half-timers."

The difficulty in the way of so organising our schools as to retain these girls lies in the fact that during the two years of pupil-teachership they must teach half their time and be going on with their education half their time. The usual plan is the regular "half-time" system, half the day learning in the secondary school, the other half teaching in the elementary school. Another which has been suggested, and is spoken of as possible in the regulations for the training of pupil teachers, is, I believe, likely to be accepted by the Education Committee of the London County Council, though with some reluctance. That is, that after one term of "trying the 'prentice hand" at teaching in an elementary school the girl should come back to her secondary school for three consecutive terms, complete her course and take some examination qualifying for admission into

a Government training college for elementary teachers, and then spend her last two terms of all in teaching again in the elementary school. It is difficult to determine which plan is, from the point of view of the secondary school, the more objectionable; but it is clear that one or other must be accepted.

We come now to the third question that must come under consideration, and that is, which will, on the whole, be the best examination to prepare these girls for, in view of their obtaining admission into a training college at the end of their period of pupil-teachership? And here I should like to say that I think it will be a grievous mistake if we hold up a B.A. or B.Sc. degree before any considerable number of these girls as (eventually) the ideal thing to aim at. For them I do not think it is the ideal thing. It is not the inevitable specialisation of a degree course that is likely best to fit the elementary school teacher for her work—she needs something wider, more general, more all-round. The degree work is for the few, who perhaps will be able to find places as lecturers in training colleges, heads of pupil-teacher schools and higher grade elementary schools, or to take up secondary work after a time. It is not for the rank and file, and it would be a pity to send girls into the elementary training college with the idea that if they are not there prepared for a degree they are being badly used. Yet I would like to give as many as possible the chance of taking the first step towards a degree, in case they have ability and opportunity to follow it up.

The regulations of the Board of Education allow plenty of latitude in the examinations which they recognise as admitting to a training college for a two years' course of training. On the whole, what seems desirable for the best of these girls is the London Matriculation Examination, or (better still, in my opinion) the School Leaving Certificate examination, which can easily be made a much more satisfactory test of good all-round work than the ordinary matriculation. This examination the best of the girls from the elementary schools should be able to pass at the end of three years' work in the secondary school. Girls who have had *all* their education in the secondary school, our own girls who become pupil-teachers, will probably be able to take it in a good many cases at the end of the probationary years and begin to work towards Intermediate Arts or Intermediate Science during their pupil-teacher period; but it is no use disguising from ourselves the fact that for the next three or four years, while the present system of probationer scholar continues, the large majority of the girls will not reach matriculation standard by the end of their third year; for many of them are very backward on entering and have to start work a long way down the school. Also there will be not a few who will seem sufficiently promising to justify our sending them in for the matriculation examination, but who will fail in mathematics or on their language papers. What is to become of these? There will not be time to prepare them for a second examination. Are they to lose their chance of admission to a college, while other girls, not so capable or so forward as they, pass into a college, because they have been successful in some humbler venture?

Is it at all possible in cases of this kind, where there has been the higher course of study and the candidate has been successful in all but one subject, to get the University to grant and the Board of Education to accept for admission into a training college, a certificate stating the course of study followed and the subjects in which the candidate has been successful in examination? Might not such a candidate be allowed to offer (say) two subjects showing ability of a different order, *e.g.*, singing and needlework, or needlework and drawing, or drawing and singing, in which she might be examined by the University a few months after the matriculation examination had been held, as an atonement for the one subject in which she had failed in the matriculation examination?

It seems as though, for girls who have no chance of matriculating at the close of their course in such secondary schools as organise pupil-teacher classes, the King's Scholarship is about as good an examination as these girls could take. The preparation for it can be made as good as one likes, the subjects are such as the girls will need to be well-grounded in, if they are to do good, useful work afterwards as teachers in the elementary schools. There is no danger of over-specialisation in a few subjects. Finally, it should be quite possible to bring even the poorest of the girls who come to us up to the level of getting at least a second class in this examination, and most of them would get a first class. This examination covers the ground of such a course of study as most secondary schools follow with what we may perhaps call the *B* sections of their forms, and it makes it possible for a girl who has been doing probably very satisfactory work in most of her subjects, and will make a good teacher in an elementary school, but who has an insuperable difficulty with either mathematics or her foreign language, to win her admission into a training college and go forward in her career. I believe, too, that the King's Scholarship work is, by the educational authorities of the country, preferred to any other course, except that for the London Matriculation or School Leaving Certificate.

HISTORY AND CURRENT EVENTS.

MUNICIPAL politics in the United States of America are always interesting, because they afford an example of the working of democracy under a system of party government and under peculiar conditions, chief among which is a constant immigration of foreigners. New York is the city of which we hear most in this respect, and next, perhaps, comes Chicago, that "mushroom" growth of railways and pork. But other cities, too, have their conflicts, and the latest news of special importance comes from Philadelphia. What would William Penn and his fellow-Friends have thought of their city of "brotherly love" could they know that it has been necessary for the ordinary citizens of that metropolis to rise in indignation against wholesale jobbery in the administration of its affairs? As in Paris during the French Revolution, when the average citizen left politics, because they were too "dirty," to the ignorant and the intriguing, municipal government deteriorates, but as soon as the mass of voters act, the rottenness disappears at once. That was the end of the French Revolution with its "terror": that is the source of our hope for universal suffrage.

THE occasion of the "scene" in the House of Commons, on Tuesday, May 23rd, was the speech of Sir H. Campbell-Bannerman, calling attention to "the statement made by the Prime Minister that the question of colonial preference might be submitted to a conference in 1906, before the country had been given an opportunity of expressing its opinion thereon." How does this country express its opinion on any subject? We ask this question because the Liberal programme, as expressed by Sir Henry only three days before the above speech includes several matters besides "colonial preference." The education question, the "liquor" traffic, economy, rating, depopulation of the agricultural districts, the combination laws, electoral machinery, and "many others of equal importance," are all to be settled by a single vote given by each citizen in favour of A or B, candidates for his district. Who will know, even after the next general election, what the opinion of the country is on the question of "colonial preference"? In Switzerland, they have the "referendum," which settles such questions by a vote

ad hoc, but then in Switzerland they have no party system, and public questions are not swamped by the great problem of making and unmaking kings.

THE papers report a "far-reaching scheme for installing a wireless telegraphy system" in the South Pacific as being considered by the Australian authorities. It is interesting to notice that the Post Office and the Naval Department are equally concerned in the matter. How illustrative that is of the history of the last century! Engineers and scientific men of all kinds have worked to connect the world together, and develop its resources for the material welfare of mankind. And "war" has never been far behind in annexing these discoveries and using them for "defence" so-called. Sometimes it has appropriated the "commodities" thus created; sometimes it has hindered their development in the name of international jealousy. Railways were to have been a great civilising agency, but they are made for "strategical" purposes, or hindered for fear of use in invasion. The "Euphrates Valley" and "Straits of Dover" are examples of the latter. And now wireless telegraphy, with its economy of material, is to be used both by the Post Office and by the Navy. Science is not obviously bringing the millennium.

EVENTS have marched rapidly in the Scandinavian peninsula. Free-trading Norway has cut herself adrift altogether from protectionist Sweden, and has dissolved the "indissoluble" union of 1814-5. We in this country are reminded of the Stuart period of our history, with its various experiments in union between England and Scotland. While the kings reigned there was but a personal union between the two, spite of James I.'s endeavours to unite the kingdoms, and Laud's to unite the churches. Cromwell effected a full incorporation, but his rule was but momentary, and when in Anne's reign commercial and other matters threatened to bring about a similar separation to that which has just happened the other side of the North Sea, the union was saved by England giving way on the commercial and religious questions, and the kingdoms of England and Scotland ceased. Great Britain became. Americans will think of their civil war and of rights of secession. Austria-Hungary will take the Scandinavian events as a deeply interesting object-lesson. And, indeed, so will all who in many countries are interested in the problem of reconciliation between peoples of diverse race, religion, or commercial views, who yet are bound together politically. "Give any two instances."

ITEMS OF INTEREST.

GENERAL.

AT the annual conference of the Association of Headmistresses, in June, Miss Gadesden, the president, proposed that, in the event of the proposed new college for secondary teachers being established, a contribution of £25 a year for five years, plus a capitation fee of 5s. for each ordinary member of the Association, should be subscribed. The resolution was carried unanimously. On the question of co-education the following resolutions were adopted: That, while accepting the principle that co-education in schools has advantages in the case of children under the age of ten, and realising that in small country places, and in other circumstances of special difficulty, co-education may be the best solution available, the conference considers that after the age of ten it is in general undesirable under the present conditions in this country for the following and other reasons: (i.) That the head of a co-educational school for pupils above

the age of ten is usually a man, while the health and character of girls need the care and control of a woman with complete authority and responsibility. (ii.) That the curriculum adopted for boys, between the ages of twelve and sixteen especially, is unlikely to be the best for girls, in consideration more particularly of their health and development at that age. Resolutions were also carried unanimously as follows:—£105 to £120 to be the minimum initial salary (non-resident) for a fully qualified assistant-mistress, rising to £150; the provision in every secondary school for salaries on a higher scale between £180 and £200, and occasionally rising to £300; the minimum initial salary of a headmistress to be £300; the general range of headmistresses' salaries to be between £350 and £700, with the continuation of the present system, by which there are in existence "some prizes of substantially higher value."

PROF. NICHOLAS MURRAY BUTLER, president of the Columbia University, New York, and well known to all British students of education as the editor of the *Educational Review* of New York and a luminous writer on numerous branches of pedagogy, will visit London shortly. Mr. and Mrs. Alfred Mosely will hold a reception at the Royal Botanic Gardens on July 3rd to which representatives of every form of educational activity have been invited to meet Prof. Butler. On July 5th Prof. Butler will be entertained at dinner at the Hotel Great Central, when Lord Londonderry will preside, and most of our educational leaders are expected to be present.

SINCE the beginning of the year a conference, called together by the London Branch of the Incorporated Association of Assistant Masters, has been considering the question of the remuneration of teachers in London secondary schools. In addition to representatives from the above branch of the I.A.A.M., the conference is composed of delegates from the Association of University Women Teachers, Assistant Mistresses' Association, the Teachers' Guild (Central Guild), and the Federation of London Teachers. The following resolutions have been passed, among others:—(1) suggesting a minimum salary of £150 a year, rising to £300 a year in the case of men; and £120, rising to £200 in the case of women, for teachers registered in Column B, and (2) welcoming the condition attached by the London County Council to the payments of grants to secondary schools, that the improvement of such salaries as are below the normal scale shall be made the first charge upon the maintenance grant. A considerable body of statistics illustrating the condition of remuneration in London secondary schools has been collected, and much evidence has also been obtained which tends to show that the supply of University men and women entering the teaching profession is diminishing. The deliberations of the conference culminated in a deputation, which was received by the Teaching Staff Sub-Committee of the London County Council on Thursday, May 18th. The deputation consisted of Mr. G. F. Bridge, Chairman of the Conference, representing the Assistant Masters' Association and the Teachers' Guild, Miss Macklin, of the Assistant Mistresses' Association and Association of University Women Teachers, and Mr. P. Abbott, Honorary Secretary of the Federation of London Teachers. The deputation presented tabulated statistics and also a diagram showing the difference in the prospects of secondary teachers and those in pupil-teacher centres and higher elementary schools, and said that their desire was that the Education Committee should define the normal scale. The conference has not yet been dissolved, and is at present engaged in collecting further statistics with respect to London salaries, both of men and women assistant teachers. Any information respecting the same would be very gladly received by the secretary to the conference, Mr. C. W. Hale, South-Western Polytechnic, Manresa Road, Chelsea, S.W.

THE Association of Education Committees held its annual meeting on June 1st and 2nd, when the first annual report was presented. One hundred and sixty committees are represented on the association. Whilst nearly all the large towns elect representatives, the report states, with regret, that hitherto the counties have not seen their way to join the association. The report sets out in detail the work upon which the association engaged during its first year, and a perusal thereof affords more than sufficient justification for its inception. As Mr. George White, M.P., said, in moving the adoption of the report, a decided impression has been made on the Board of Education, notably in the matter of the circular relating to secondary schools, the fees of secondary schools, and the limitation of scholarships.

THE president, Mr. J. Tudor Walters, in his address on the aims of the organization, dwelt at length upon the need of a national scheme of secondary education. As illustrating the great contrast between the feelings of the people here and in the United States on secondary education, he related the following experiences of a Yorkshire educationist on a visit to the latter country. A washerwoman earning five dollars a week was asked how it was that she could afford to send her daughter to a high school until she was eighteen. "I cannot afford *not* to do it," was the reply.

A RESOLUTION was moved proposing that all children under the age of five years should be excluded from attendance at public elementary schools. The supporters argued that confinement in the schoolroom was mentally and physically detrimental to children under five, that their attendance was largely instrumental in the spreading of infectious diseases, and that their frequent absences had a prejudicial effect on the grant for average attendance. Other speakers ridiculed the idea of physical or mental strain, drew attention to the high state of hygienic efficiency of modern day-schools, and pointed out that the Board of Education would insist upon the children being provided for in some way. Ultimately the resolution was rejected by a large majority.

ON May 26th, Lord Londonderry opened the new buildings of the City of London College. The old buildings were erected and fitted out, in 1883, at a cost of about £16,000. The chairman of the Governors, Sir Edward Clarke, K.C., stated that in order to make adequate provision for the largely increased number of students—last year there were 2,214 on the books—and to provide a thorough course of commercial instruction, they had resolved to add twenty more class-rooms. In their efforts they had been materially assisted by the London Chamber of Commerce, whose educational activities were now being conducted through the college. The alterations necessitated an expenditure of some £30,000, of which all but £5,000 had been raised. In his speech Lord Londonderry made the gratifying announcement that the Board of Education has at length decided to make grants for advanced work in organised courses of commercial instruction—"at a higher rate than that awarded in respect of separate classes in individual subjects." The good work done by the London Chamber of Commerce in the direction of commercial instruction was emphasised by Sir Albert K. Rollit, M.P., the day before, when he pointed out that there was an increasing tendency nowadays to dispense with the alien city clerk.

THE London County Council has granted the request of the Robert Browning Settlement to be allowed to use the Sandford Row Council School, Walworth, as a holiday school from the commencement of the summer holidays until August 18th. These holiday schools, particulars of which have appeared

from time to time in THE SCHOOL WORLD, have proved an attractive feature to children who would otherwise "recreate" themselves in the streets and alleys of the metropolis. Vacation schools are much more common in the United States than elsewhere. In the summer of 1903 nearly every city there of 100,000 inhabitants had vacation schools; New Orleans was the last large city to join the movement. The indications all point to the spread of the system in the States, where not so much provision is made for the children in the matter of recreation grounds, parks, etc., as is the case in our own country, for instance.

DURING the second week in June the second congress for the promotion of school hygiene and pedagogic physiology was held at the École de Médecine, Paris, under the presidency of M. E. Lavisse, of the French Academy. Two papers dealing with the education of the family in matters of hygiene were read by M. Chabot, of Lyon, and M. Bourgrat, of the Lycée Ampère. After they had been discussed the congress passed the following resolutions: (i.) The education of the family in school hygiene is indispensable, for hygienic conditions cannot be maintained with the pupil or in the school unless the collaboration of the family is secured. (ii.) The organisation of remedial measures is thwarted by (a) the lack of time or funds, ignorance, prejudice, inertia, and slovenliness of the home; (b) the insufficiency of our knowledge of school hygiene; (c) the want of organised relations between the school and the family. (iii.) The limited and tentative experience which has been gained in France and abroad appears to show that the following means of attacking the difficulties are most suitable: (a) general propaganda; (b) individual action as regards everyday matters; (c) the formation of societies and the *réunion* of parents, doctors, and teachers; (d) organised official co-operation between school and home. (iv.) The programme of instruction should be limited, in the first case, to the simplest and most essential principles.

SPEAKING at the annual prize-giving and jubilee celebration of St. Edmund's School, Canterbury, the Dean of Canterbury drew attention to the increasing expenses of education, due, in a large measure, it was suggested, to the pressing demands of scientific teaching. When he was a boy at school there was scarcely anything necessary for the purposes of his education except a room, a book, a man, and sometimes a stick. For the purposes of some scientific studies nowadays the apparatus is apparently quite extraordinary. The Dean hopes that in the development of that school those healthy Spartan habits in which boys were originally trained will not be forgotten. He believes there is too great a tendency in schools nowadays to encourage luxury among the boys. When he rowed in his college boat at Oxford, when he came up to his barge he was quite content to wash himself with cold water, but the young gentlemen of the present day require hot water laid on in their barges. The thing has come to a head, he continued, when in a great public school the governors actually find it necessary to provide the poor little boys with shower baths when they come in from football.

AT the meeting of the Education Committee of the County Councils' Association on June 6, it was resolved, with a view to some general organised system for the training of teachers being established, that the attention of the Board of Education should be called to the desirability of further inquiry before any largely increased expenditure is incurred in providing further training colleges. A somewhat similar resolution was passed, three days later, at the conference of diocesan secretaries and inspectors, in connection with the National Society.

THE summer course of the Educational Handwork Association will be held this year in the Municipal School, Scarborough, from July 31 to August 26. The work will include woodwork, Sloyd, woodcarving and design, repoussé and leather work, cardboard working, clay modelling, free-arm drawing, simple apparatus making, and other subjects. The course will be under the direction of Mr. J. Tipping, the superintendent of drawing and educational handwork to the Bradford Education Committee. Full particulars can be obtained from Mr. W. Mc Weeny, 13, Springwood Avenue, Bradford.

LAST year the French Ministry of Public Instruction initiated, in conjunction with the Board of Education, a scheme whereby a number of young teachers (men and women) were appointed temporary "assistants" for one year in French Lycées and colleges. The scheme will continue in operation this year, and the French Ministry will shortly proceed to make fresh appointments. The main duty of the "assistant" will be to conduct conversation classes for about two hours daily. He will not receive a salary, but he will be lodged and boarded at the institution to which he is attached. Candidates for such posts should preferably be graduates of some British university, and should forward their application, containing particulars of their course of study and qualifications, to the Director of Special Inquiries and Reports, Board of Education Library, St. Stephen's House, S.W., enclosing testimonials *in duplicate*, and a medical certificate of health. It will be necessary for each candidate to have a personal interview with the Director at his office. All applications must be received on or before July 8th.

THE programme for the forthcoming meeting of University Extension students, to be held at Oxford in August, has now been issued. The general scheme of lectures has been designed to illustrate the history, literature, fine art and architecture of the period of the Renaissance and the Reformation, and there will also be special sections devoted to natural science and social economics, as well as classes in the theory and practice of teaching. Classes in the English language, designed primarily for foreigners, will also be held. The meeting will open on August 4th, and will close on August 28th, and will be divided into two parts for the convenience of those who cannot stay the whole time. The inaugural meeting is to be held under the presidency of the Vice-Chancellor of the University, and an address is to be given by Prof. James Stuart, of Cambridge, the pioneer of university extension. Among the lecturers will be the Dean of Christ Church, the Warden of Keble, the President of Corpus, the Earl of Crewe, the Earl of Lytton, Mr. George Wyndham, M.P., and many others. In the section devoted to pedagogy, it is of interest to see that Herr Max Walter, headmaster of the Musterschule, Frankfurt, will give a short course on reform in the method of teaching foreign languages. Full particulars of the meeting can be obtained from the secretary to the University Extension Delegacy at Oxford.

THE report of the Teachers' Registration Council for 1904 states that the accounts for the year show a net profit of about £2,300, and estimates that by March 31st, 1905, the balance will be increased by £500. If the original intention of the Board to print the register had been carried out, the amount received in fees would have been more than swallowed up by the cost. With regard to applicants who offer insufficient evidence of ability to teach, it has been decided to refer them to assessors appointed by the teacher-examining bodies named in Appendix C of the Teachers' Registration Regulations, which include, among others, the Universities of Oxford, Cambridge, London, Victoria, Durham, Birmingham, Edinburgh, Glasgow,

Aberdeen, Dublin, and the College of Preceptors. Most of these bodies have undertaken to report on applicants referred to them. With the exception of requiring the examination to comprise both a written and a practical test, the council has left the arrangements, financial and otherwise, to the discretion of the examining bodies. A difficulty arose during the year with regard to the admissibility of certain sections of teachers—namely, those at Universities, training colleges, and evening schools. The council finally decided that the following classes should be held eligible:—Teachers in schools other than elementary, whether such schools be recognised or not, and private tutors whose teaching has been other than elementary. But that the following should be held not eligible: tutors and lecturers in Universities and colleges of university rank, tutors and lecturers in training colleges, and teachers in evening schools. The council has asked the Board of Education to consider the advisability of providing for the recognition of French and German schools of assured reputation, with a view to employment in such schools being accepted as probationary experience.

THERE were 8,321 teachers' names in Column B of the register on March 31st, 1905, as against 5,510 on the same day last year. A considerable number of these have been registered under the regulation which allowed the registration authority to accept ten years' teaching experience, other than in elementary schools, as an adequate test. Very few "trained" teachers are registered at present; after next March, a course of training will be necessary for all who wish their names to be registered in Column B—though this regulation may, perhaps, be modified as the result of the deliberations of the consultative committee, which are now taking place. Seeing that registration is generally insisted upon as part of the qualifications for the post of headmaster, it behoves those assistants who have such promotion in view to bestir themselves. The fee for registration is only one guinea, and, we imagine, most teachers would pay this several times over rather than submit themselves to yet another examination.

MR. J. E. LITTLEWOOD and Mr. J. Mercer tied for the senior wranglership in the Cambridge Mathematical Tripos this year. Both are Trinity College students—the former having received his early education at St. Paul's School, the latter at the Oakes Institute, Walton, and Liverpool University. Both senior wranglers are only second-year men. The first of the women, Miss E. M. Newbold (Newnham), was equal to the twenty-sixth wrangler.

A COURSE of lectures and excursions arranged by the Co-operative Holidays Association (in connection with the National Home Reading Union), and dealing with the geology of East Yorkshire, will be given by Mr. Albert Wilmore, headmaster of the Colne municipal secondary school and director of technical instruction at Whitby, during the fortnight beginning on July 29th. Further particulars may be had by sending a stamped addressed envelope to the corresponding secretary, The Abbey House, Whitby, Yorks.

OUR readers will recollect that the organ of the Modern Language Association was divided into two parts at the beginning of this year. The arrangements for the publication of the academic moiety have only just been completed, and the first number of the new *Modern Language Quarterly* will make its appearance in the autumn. But the teaching section—which is entitled *Modern Language Teaching* and is published by Messrs. Black—made its first appearance in March under Prof. Rippmann's editorship, and the fourth number for June lies before us. The chief articles are on "The Bases for determining the Reading of English Literature," by Mr.

Norman Fraser—a consideration of the Board of Education's four-year course; a plea for "French Philological Teaching in Schools," by the Rev. H. J. Chaytor; and on "The Organization of Modern Language Teaching in a Secondary School," by Miss E. C. Stent, which is an interesting account of the change from the old grammatical system to the direct method in a large girls' school. There is a letter on oral examinations from Mr. W. O. Brigstocke, and a useful criticism of the French paper at the Army Entrance Examination. The recent *tolérances* in French spelling are given, and there are notes on the London Sprachverein, Holiday Courses and International Correspondence for scholars. The association appears to have been wise to separate the scholarly from the purely professional journal, and the latter should now be eagerly bought by every modern-language teacher who wishes to keep *au courant* with modern methods.

THERE is a movement in the United States to hold a Phonetic Conference in order to establish a universal alphabet for use in dictionaries and school books to show the pronunciation. Prof. J. Geddes, jun., of Boston University, is the moving spirit, and he desires to obtain subscriptions amounting to £2,000 to pay for the expenses of such a conference. In the States, where private munificence for educational purposes is so rife, it should not be difficult to raise such a sum. The conveners have been wise in limiting the essential task of the conference to provide a common alphabet for English, French, German, Italian, and Spanish. Other languages would only receive consideration in so far as is compatible with this essential proposal. Otherwise there might be a risk of failure through attempting to harmonize too many conflicting demands. No doubt the alphabet of the *Association Phonétique Internationale* would form the basis of the proposed alphabet. We venture to doubt whether a representative congress could be held unless it were held in Europe.

A MANCHESTER merchant has for the last three years provided two bursaries of ten pounds each with the view of improving the teaching of modern languages in Manchester and the adjoining district. The bursaries are awarded to a man and a woman respectively, who must fulfil the following conditions:—They must be not less than twenty-one, or more than thirty years of age; employed at present as teachers in some school under public control in Manchester or the district, and likely to remain in the same or similar posts; at present teaching some modern language, as part of their ordinary work, and desirous of using the summer holiday for a definite course of study abroad, as well as be willing to undergo on their return some examination or test both oral and written as to their practical acquaintance with the language studied. Preference will be given to those unable to go abroad without assistance. The languages in view are French, German, Spanish, and possibly Italian. Forms of application and information as to holiday courses abroad may be had from Mr. W. J. Chatterton, Joint Hon. Sec. of Teachers' Guild, Grammar School, Manchester. Final applications must be sent in not later than July 8th, and the award will be made before the end of July. It is earnestly to be desired that this example may be followed by many more business men in our great towns, for the satisfactory results which have followed the Manchester experiment show that the teaching of modern languages can in this way be much improved.

SEVERAL educational reforms of a hygienic nature were advocated by Mr. J. Osborne Smith, in his recent paper read at the Conference on School Hygiene. Attention was drawn to the anomaly that obtains in the matter of floor space per pupil allowed by the Board of Education in elementary and secondary schools respectively. Whilst 18 ft. is to be the official minimum

in the latter, a pupil in an elementary school may be allowed 10 ft. only, with 13 or 16 ft. (according to the size of desk used) in the higher elementary schools. The location of sanitary conveniences in many cases leaves much to be desired, and, in the present state of sanitary science, there is no reason why they should be situated, as they often are, at the end of a long playground with no covered approach. With regard to ventilation, the unintelligent use of open windows, especially in manufacturing towns, was unfavourably commented upon. The aim of the sanitarian should be directed to restrict the causes which deteriorate the air of the cities and large towns rather than to encourage the boxing up of children in a series of sealed cells and the pumping in of air specially prepared for indoor consumption.

ON the motion of the Premier of New Zealand, a committee was recently appointed to report on all matters relating to education and instruction generally in the colony. The committee passed the following resolution:—"That in the opinion of this Committee the efficiency and permanence of our primary system of education is contingent on the improvement of the conditions under which our teachers labour, and they regard a superannuation scheme as the means best calculated to insure at once encouragement to teachers and a vigorous staff to carry on this important work." Mr. Seddon has promised to introduce a Bill during the coming session.

A SERIES of articles on higher commercial education in England, by Mr. W. R. Lawson, has appeared recently in *The Financial Times*. Writing on the topic, "The Restricted Supply of Students," Mr. Lawson attacks, in vigorous style, the attitude of Oxford and Cambridge towards the training for commercial pursuits. Higher commercial education, he says, is the youngest of university faculties; it offers fewest academic prizes; it has the most vague and uncertain future. "Bachelors of Commerce" will not multiply and increase until the degree acquires a practical value as definite as that of the corresponding qualifications for the Church, the Bar, or the Army. In all four cases it is the same sort of youth that is wanted, and in order to secure him in adequate numbers the commercial profession will have to be put on a level with the other professions. It is the writer's opinion that the new "Faculties of Commerce" have little help or comfort to expect from the public schools, though, as he sarcastically (?) adds, "they may better serve the 'Faculties of Commerce' by furnishing them with raw material of good general quality than by trying to specialise it." In any case, he pleads for a more sympathetic attitude on the part of these schools towards the movement for commercial training.

THE Board of Geographical Studies of Cambridge University has arranged its programme for the session 1905-6. Sir Clements Markham will deliver an inaugural lecture early in the Michaelmas term. Mr. Oldham will be responsible for the general course for the special examination and diploma, Part I.; and will lecture on the geography of Europe, the principles of physical geography, and the history of geographical discovery. Dr. Marr will lecture on geomorphology, Dr. Haddon on ethnology and anthropogeography, and Mr. Hinks will deal with geographical surveying (including field work).

AN examination for one geographical scholarship of the value of £60 will be held on October 12 next at Oxford. Candidates, who must have taken Honours in one of the Final Schools of the University, should send in their names to the Reader in Geography, not later than October 2. The scholar elected will be required to attend the full course of instruction at the School of Geography during the academic year, 1905-1906, and to enter for the University Diploma in Geography in June, 1906.

TEACHERS generally will read with interest the testimony to their unsatisfactory financial position contained in the following extract from the report of the Finance Committee of the London County Council: "On this subject of competition between the authorities to obtain teachers, it would appear that, even if the London scale is improved with a view to attract more teachers to the London schools, there is no reason to expect that the extra-metropolitan authorities will not revise their scales in sympathy; and, consequently, there can be no absolute assurance that, so far as this competition between the authorities is concerned, London may not again be in the same position comparatively as is the case to-day. On the other hand, however, it may be that such an all-round improvement in salaries would induce larger numbers to adopt the teaching profession, and this would presumably be the best solution to the difficulties which are stated to exist now."

IN his annual report the Director of Education in Victoria again complains of the need for reforms in the system of education in the colony. He instances the minuteness with which the Legislature prescribes for methods of instruction, leaving little personal responsibility on the permanent head; the fees to teachers have been continued on the discredited system of payment by "results," though the examinations on the basis of that method are no longer in existence; and the system for the training and supply of teachers is most unsatisfactory even in the State schools, whilst outside them there is no system. Financial considerations greatly hamper the work of reform, but, as the director points out, "Good education, like every other commodity, demands its fair price, and if that is not forthcoming, the article served out soon suffers."

WE have received a copy of the first number of *Skandinavisk Månadsrevy*. The English editor is Mr. C. S. Fearenside, who contributes a series of notes on English text-books for use in schools; he also proposes to inaugurate a lending-library of foreign books for English teachers.

The University Review, the second number of which is to hand, is a monthly periodical that makes a special feature of its universities' and university colleges' information. Of the special articles in the present number one of the most interesting is "Questions for Discussion," by Sir Oliver Lodge. Dealing with university degrees, the Principal of Birmingham University says that the old English degree of B.A. was intended to signify that the graduate had been properly educated in the knowledge of his time up to a certain moderate standard. It had no specific reference to any particular kind of art or arts, and to this day is employed in many universities so as to cover a training in almost every variety of knowledge. Recently, since more specially so-called scientific subjects have come into prominence, a few universities have begun to award a new kind of degree, the B.Sc. Used to signify a special professional training in science, the term is appropriate—even as the term B.Lit. would be appropriate for a similar training in literature.

BUT neither of these trainings is appropriate to the average man who comes for a general education. A general education in the knowledge of the time—even if this includes some scientific, literary, or mathematical knowledge—should be marked with the title of B.A. At some other time, when the student has specialised, then he may rightly be awarded the additional distinction of B.Lit. or B.Sc., as the case may be. On the other hand, if after matriculation the undergraduate at once begins to specialise, and has no intention of taking the B.A. degree of general education, he should not be given the title of B.A. at the end of his course, but that of B.Lit. or B.Sc. Sir Oliver Lodge would, further, allow the B.A. degree to be conferred on

the B.Lit. or B.Sc. who subsequently engrafts a wider education on his special knowledge by taking the course in general education.

THE REV. ST. JOHN BASIL WYNNE-WILLSON, an assistant-master at Rugby, has been appointed master of Haileybury College, in succession to Canon Lyttelton, the new headmaster of Eton College.

MR. S. R. HART, headmaster of Handsworth Grammar School, has been appointed headmaster of Rugby Lower School.

MR. A. CLENDON, headmaster of Dolgelly County School, has been appointed headmaster of Handsworth Grammar School.

PROF. JOHN ADAMS, head of the department of education of the University of London, is to deliver a course of lectures at the University of Chicago during the summer quarter.

SCOTTISH.

THE annual report of the Committee of Council on Education in Scotland, which has just been issued, is a record of progress all along the line. The number of pupils on the registers has increased by 8,019, and is accompanied by a rise of 12,980 in the attendance. The percentage of attendance has risen from 85.21 to 85.98, the highest ever recorded. Notwithstanding the marked advance in roll and attendance, the Department is satisfied, from a careful investigation of the Registrar-General's statistics, that there are still 100,000 who should be, but are not, on the roll. These figures point either to a breakdown in the work of the attendance committees of school boards, or to the insufficiency of existing measures to deal with this problem. The number of schools has risen to 3,189, an increase of forty for the year. One of the most remarkable features brought out by the report is the increase in the number of higher-grade schools. These have risen from thirty-four in 1901, thirty-six in 1903, to seventy-four in 1904, and we are told that at the date of issuing the report the number was 116.

ONE of the most hopeful features in the educational outlook of the present day is the increasing importance that is being attached to the continuation schools. These may be regarded as the secondary schools of the masses, and, as they are being more and more appreciated by those for whom they are intended, it may fairly be concluded that the value and necessity of further education is being brought home to the rising generation. The object of these schools is to provide such special instruction as pupils who have ceased regular attendance at school are impelled to seek by experience of the requirements of life, and of their own particular occupation. The issue of the new Continuation School Code shows how admirably the Department has framed its regulations for attaining this aim. As in previous years, pupils are classed in three divisions, according to their stage of advancement. In Division I. no change has been made in the regulations of previous years. In Division II. the qualifications for attendance have been entirely recast. Anyone may be admitted to these classes provided he can satisfy the managers of his fitness to profit by the instruction given. But, while such may attend the classes, Division II. grants will only be paid for those who are over sixteen years of age or possess certain certificates. It is, however, provided in the new Code that a year's attendance at a higher-grade or higher-class school will be accepted in lieu of such certificates. The concession in regard to attendance unaccompanied by a concession in the case of grants will be received by teachers with mixed feelings, as it will doubtless

tend to complicate still further the hopeless nexus of clerical work that is the bane of the continuation schools. The regulations for Division III. do not call for special notice, but it is satisfactory to note that the Department is now prepared to sanction in special cases, on the ground of small enrolment of pupils, the simultaneous instruction by the same teacher of two classes in Divisions II. and III. This should prove a great boon in rural districts.

THE Corporation of Edinburgh, by conferring the freedom of the city upon Lord Reay, Lord Young, and Miss Flora Stevenson, may be said to have acted not so much in its municipal as in its national capacity as representing the capital of the country. All the recipients of the honours have rendered signal service to the cause of national education, and all have behind them a record of a strenuous, lifelong devotion to the public good. Lord Reay is perhaps best known south of the borders as the former Chairman of the London School Board, but in Scotland he was known as one of the most thoughtful students of educational problems long before he accepted that office. He has been closely identified with the development of technical education in this country, and for many years has acted as president of the Technical Education Association. Lord Young's name will ever be associated with the passing of the Education Act of 1872. The many important provisions which differentiated it from the English Act of 1870 were due to the address and skill with which Lord Young appealed to national patriotism and obtained the support of all parties in carrying forward under better conditions the old Scottish educational traditions. For the past thirty-two years Miss Flora Stevenson has been a member of the Edinburgh School Board, and for the past five its chairman. Her whole life has been devoted to educational administration and to organised charitable work, and the influence of her beautiful character and unselfish labours has extended far beyond the bounds of her native city.

THE annual meeting of the Sloyd Association of Scotland was held in Allan Glen's School. Dr. Morgan, rector of the E.C. Training College, Edinburgh, presided over a large attendance. Dr. J. G. Kerr, in submitting a report on the work of the Association, said that during the past seven years 300 had been tested on educational handwork of different kinds, and over 200 had gained certificates. These certificates were now accepted by the Scotch Education Department and by the Board of Education as evidence of fitness to conduct classes in the respective subjects.

THE multiplication of amendments to the Education (Scotland) Bill proceeds apace. The latest amendment paper shows a list of two hundred and thirty-nine, and the whole document runs to the formidable total of twenty-two pages. The mere enumeration is sufficiently appalling, but a close scrutiny of the character of the amendments reveals some more hopeful features. Many are purely verbal, and cannot give rise to any discussion unless to a determined obstructionist. Thus Mr. Black has an amendment proposing that "connexion" in Clause 17 be read "connection." It is just possible that some humourist member may see in this amendment an opportunity for a dissertation on spelling reform. But we have faith in the good sense of the Scottish members, and they may be trusted to make as short work of the great majority of amendments as of the above. The fate of the Bill will depend to a large extent on the reception given to the Church Bill. If it is controversial, the fate of the Education Bill is sealed, as two opposed Scottish measures can hardly go through the House of Commons in one session, and the Church Bill *must*.

AN important meeting has just taken place of delegates from the four Scottish Universities to consider the question of the proposed three-term session in lieu of the present winter and summer sessions. The proceedings were private, but it is understood that the subject was considered in all its bearings, and the general opinion was decidedly in favour of the proposed change. At the same time it is recognised that numerous difficulties have still to be overcome, as the change in Scottish university life will be considerable; but the hope is general that these difficulties will be speedily got over in view of the great improvement that will be effected in the plan of teaching. The various delegates will report the result of the conference to their respective University Courts.

IRISH.

It is stated that the plans for the new College of Science in Dublin, the foundation-stone of which was laid last year by the King, are now well advanced, and building will soon commence. Besides the College of Science, offices will also be built for the Board of Works and for the Department of Agriculture and Technical Instruction, but it is not contemplated proceeding with these at present. When, however, the whole scheme is complete, there will be a remarkable group of buildings south of the present museums and covering most of the ground between Kildare Place and Upper Merrion Street. The group is to be built in the form of a broken square opening out on Upper Merrion Street, with a frontage of about 390 feet and a depth of about 170 feet. The college will form the principal side of the square, and from it on each side will project wings for the two Government offices mentioned. The frontage of the college will be about 200 feet, and its depth 73 feet. In front of it will be a courtyard of about 200 feet square. The ground plans of the college are practically complete, and a contract has been entered into for clearing the site and making excavations. The architects are Mr. T. M. Deane, of Dublin, and Sir Aston Webb, R.A., of London, and it is expected that the total cost will be over £150,000. In the meantime, temporary buildings are being erected in Adelaide Road to afford extra accommodation for the Electro-Technological Department and the Mechanical Engineering Department.

THE Department has issued a circular dealing with the qualifications of teachers of domestic economy in day secondary schools. Hitherto grants have been made for this subject only when taken in conjunction with the two-year preliminary course or one of the special courses of experimental science and drawing, but during the third and fourth years domestic economy may now be taken by itself as a special course, and therefore the Department has reconsidered the question of the qualifications of teachers in this subject. Persons will be recognised as fully qualified who have obtained the diploma of the Irish Training School of Domestic Economy, or who hold the Cookery Teachers' full Diploma issued by the Board of Education, London, together with full certificates in laundry work and dressmaking from an approved training school. Persons not holding these diplomas or certificates may obtain exceptional recognition conditional upon successfully attending special summer or other recognised courses of instruction in the subjects of the two-year preliminary course of experimental science and a summer course in domestic economy consisting of not less than 100 hours' instruction. This provisional recognition may further be converted into permanent recognition on certain conditions of which full particulars may be obtained from the Secretary of the Department.

A MEETING of the subscribers to the fund for the better equipment of Queen's College, Belfast, was held on June 2nd, under

the presidency of Sir Otto Jaffe. The fund was started four years ago, when there seemed more immediate prospect of the Government assisting the development of university work in Ireland. The committee of the subscribers has waited to see what, if any, action the Government would take, and, having come to the conclusion that nothing is likely to be done for the present, has determined to issue its report to the public. In all £30,000 have been subscribed, and an appeal is now made to the Government to lend such further assistance as may be necessary to bring the buildings and the equipment of the college to the up-to-date standard now generally recognised as essential for good university work.

THE Irish Parliamentary Party has issued a protest against the growing practice of throwing upon the Irish Development Grant Fund charges for various purposes other than education. The grant was originally made as an equivalent to educational grants made in England and Scotland. It was generally understood at the time that the money should be devoted to Irish education, but up to the present very little has been spent in that direction, and there is serious danger that it may all practically be diverted from its true purpose. The real reason of this is, of course, that the Government will not or cannot make up its mind to a reform of Irish primary and secondary education, and it is quite possible that when it has done so most of the grant will have gone elsewhere, and there will not be sufficient left to finance any new scheme with success.

MUCH discussion has arisen lately on the motives which led Trinity College to open its portals wide to women. The Board has been censured, but unfairly, first for admitting women to pass courses instead of limiting them only to honours, and secondly for admitting women from Oxford and Cambridge to so-called *ad eundem* degrees. Both are attacks on the Board's generosity. The Board, as became Irishmen, have been perhaps impulsive, but certainly generous. Time will prove whether they were wise in admitting pass women, but, having determined to admit the other sex, they have done so without reservation. The second is a delicate point of etiquette. Should Trinity give degrees where Oxford and Cambridge do not? It may be presumed that Oxford and Cambridge were consulted, and made no objection. There are, it must be remembered, limitations. Such *ad eundem* degrees must be taken within a now very narrowly specified time, and they are retrospective only. The objects of the Board in giving them have been to remedy a seeming injustice to Irish ladies who, not able to get a degree at a resident university in Ireland, have in the past crossed the water, and to advertise the opening of Trinity College to women. Who will deny that they have done this signally?

THE Board of Trinity has instituted new honour courses in modern languages for the Hilary and Trinity terms of the junior and freshmen years in each of the following subjects: English literature, French, and German, to come into force in 1906. In the moderatorship examination in modern literature candidates may present themselves in any two, and two only, of the sections—English, French, and German; but all candidates must qualify in English composition. The examination will be both written and oral, and will include composition in both the languages chosen.

WELSH.

THE Committee of Lords of the Privy Council, to whom was entrusted the inquiry as to the location of a National Museum and National Library for Wales, has reported that the National Museum should be established at Cardiff and

that Aberystwyth should be the seat of the National Library. The Committee reports that there were cogent reasons, geographical and linguistic, for locating the library apart from the museum. It recognises that the encouragement to students by a healthy and tranquil atmosphere for study is a consideration in connection with the library. Aberystwyth provided the £20,000 which was placed as the minimum capital required. No doubt also the fact that Aberystwyth has already a remarkable Welsh library, and will, in the future, have a collection like the Peniarth MSS., had great weight.

THE policy of withdrawal of children of Nonconformist parents from church schools has begun in Merionethshire. It is announced that at Llanelltyd Church School, which has a total of thirty-three scholars, twenty-four have been withdrawn and are now conveyed to a Dolgelly provided school, furnished with a mid-day meal and driven home again after school. It is stated that £30,000 will be wanted for emergency schools to enable Merionethshire to carry out its policy fully. It has been reported that the Church party intend to withdraw scholars from provided schools in Dolgelly to replace the leakages. At any rate, "declaration of war" and other strong terms are being used—some of which seem to be but little relevant to educational progress.

THE Flintshire Education Committee has received a request from sixteen non-provided schools to be supplied with Bibles. At the meeting of the authority to consider the question, one member argued that they all knew there were certain parts of the Bible unfit to be read in schools, and it was a question whether it would not be better and cheaper to print the special parts agreed to be taught in schools. Eventually it was decided to supply Bibles, on the condition that they were "to be used for day-school purposes only." In the Flintshire authority two churchmen have been appointed chairman and vice-chairman respectively.

BEFORE the Machynlleth District Education Committee it has been reported that one headmaster, whose salary has not been advanced, sets down an increase, and though it is struck off, he carries the balance forward each time!

AN interesting question has been raised in the Carnarvonshire Education Committee, *i.e.*, whether the authority should arrange with the local nursing associations for the nurses to attend the schools for the purpose of examining and treating children in connection with their health. It is pointed out by the advocates of the idea that, when children "herd together" in the public schools, much that is harmful may happen by associating "with unkempt, unclean, and possibly verminous children." Surely, however, the argument should go further. Is not a medical officer desirable also, who should advise from time to time with regard to the eyes, ears, teeth, etc., as well as the matters referred to. Are nurses to become medical officers? If so, will not high qualifications medically be required? The objection urged is the expense. But many think the care of the children's bodies is clearly important. It is not a matter in which expense should stand in the way.

THE Court of the University of Wales has appointed a committee to draw up a scheme for bringing the University into touch with the business world, in the hope that an employment bureau may be established.

THE Montgomeryshire Education Committee has made a request to the County Standing Joint Committee asking the assistance of the police for the school attendance officers in their duties. It was resolved that it was not desirable to give effect to the request.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Emile et Hélène. A French Primer by Mrs. J. G. Frazer. vii. + 75 pp. (Macmillan.) 1s.—This little volume is intended for children, to whom the preface is addressed, although it seems directed rather at the teacher. Emile talks about himself and shows himself to be not an altogether attractive little boy. The number of words used is rather large; the sentiments expressed are familiar to readers of Mrs. Frazer's popular books. Much of the dialogue is excellent, but at times the humour is rather strained. The text includes the story of *Les deux bossus*, in which there are some lines of verse which do not scan. The grammatical exercises are by M. L. Chouville and are on modern lines, there being no unapplied grammar. The vocabulary is not complete. The book is carefully printed on the whole; we have noted *çà* instead of *ça* (= *cela*) occurring several times.

Lectures Françaises, Géographie et Histoire. By W. M. Poole and M. Becker. ix. + 137 pp. (Blackie.) 2s. 6d.—This book is intended to convey, by means of interesting selections in excellent literary style, an elementary knowledge of French geography and history, to pupils of twelve to fourteen years of age. This the authors state to be the aim of the present volume, and they have been singularly successful. The text is very well selected, and accompanied by capital illustrations. A number of questions (in French) on the text are also provided, and a glossary of words arranged according to the lesson in which they occur. We warmly recommend the *Lectures Françaises*.

Rapid Revision Exercises in French Syntax. By W. H. Hill. 63 pp. (Blackie.) 1s. 6d.—This convenient little volume provides exercises in syntax without aiming also at increasing the vocabulary, which is a reasonable limitation. The exercises will be found useful to teachers, whether they teach on the old lines or subscribe to the reform method. Sometimes the English word is used, even where it is not absolutely necessary. The practice of giving faulty sentences to be corrected, of which there are several instances here, is not to be commended; it is gratifying to find that it is disappearing from the papers set at all respectable examinations.

A First French Song Book. By F. B. Kirkman and R. B. Morgan. 48 pp. (Blackie.) 6d.—An excellent little selection of French songs, well printed. Most of the old favourites are here and some new ones. The tunes are given in the ordinary as well as the tonic sol-fa notation. There are twenty-seven songs in all. Two pages of English notes are added.

Anecdotes et Récits. By W. G. Hartog. viii. + 121 pp. (Rivingtons.) 2s. 6d.—Mr. Hartog's latest book is described as "a reader for elementary and middle forms." It contains a good selection of stories, more or less familiar, and illustrated by pictures of a queer type, reminding us now of Aubrey Beardsley, now of rubbings of old brasses, and again of Anning Bell. There are some good oral exercises, and also English passages for retranslation, which Mr. Hartog has inserted "at the request of many teachers," and against his own better judgment, as he confesses in the preface. The French-English vocabulary (which seems practically complete) is probably also a concession to the "many teachers." At this early stage nothing is more calculated to upset reform methods of teaching

than the use of the bilingual dictionary or vocabulary by the pupils.

The Story of Cupid and Psyche. By H. A. Guerber. 32 pp. (Heath.) 4d.—It is painful to find the beautiful tale "arranged for translation into French and provided with a complete vocabulary." To anyone with delicate feeling it gives a shock to see this text disfigured by round and square brackets and by explanations in italics. If it had to be done, however, it could not well have been done better than by the editor of the popular volume of "Contes et Légendes."

Selections from Standard French Authors. By O. G. Guerlac. vi. + 214 pp. (Ginn.) 2s. 6d.—Mr. Guerlac has selected thirty-eight passages in prose and verse from Molière and La Fontaine, from Voltaire and Mme de Sévigné, from Victor Hugo and Flaubert, and other standard writers of the last three centuries. He has done his work well, and produced an anthology which will afford attractive reading for pupils of fifteen or sixteen. Notes on the subject matter and on points of grammar and idiom are given (in English) at the foot of the page, and brief biographical notes on the authors are also provided. The vocabulary seems to be complete.

The Teaching of Modern Languages. By Leopold Bahlsen. Translated by M. B. Evans. 97 pp. (Ginn.) 2s. 6d.—These lectures were delivered at the Teachers' College, Columbia University, in the session of 1902-3. They give a brief historical sketch of methods of language teaching, and an account of the reform of modern language teaching in Germany. A chapter on "pronunciation" follows, in which proper attention is given to the value of phonetics. The rest of the book deals with the early stages of instruction in French and German, the "analytical-inductive" method, and a reading course in German for secondary schools. The book hardly offers anything new to the firm believer in the reform method, but may be warmly recommended to those who are still wavering. The translator has followed his German original too closely; a single sentence will serve to show this: "The purpose of such study indicated at once and in a perfectly natural manner the way to be followed—and the means of making the start in this way." This is intelligible, but ill-expressed.

Classics.

Aristophanes: the Acharnians. Edited by C. E. Graves. xvi. + 143 pp. (Pitt Press Series.) 3s.—The editor of this serviceable edition of the "Acharnians" is experienced, and his work is thorough. We may offer a general criticism, however, that he is a little too apt to refer to his predecessors when we expect him to provide all that we want. Such notes as that on 38 ("here Mitchell has a long, illustrative note on the methods of obstruction, &c.") are useless; and a few others might well be omitted (as on 1, cognate accusative; 68, ἐτροχόμεθα). Βαίά, by the way, has the look of a colloquialism (in 1, 2) rather than a poetic touch; not seldom we find old words surviving in popular speech when they are not found in ordinary prose, as we also find old constructions like εἰ with the subjunctive in Aristophanes. The point of the idiom attempted to be explained on 91 is not the participle but the position; in each case quoted, as always, the emphatic phrase is put in a telling place, and if it be a participle that is an accident. Thus: Ἰππαρχον | οἴονται τύραννον ὕτα | ἀποθανεῖν = "they think he was tyrant | when he died"; but οἴονται ἀποθανεῖν τύραννον ὕτα would mean, "they think he died | before the end of his tyranny." On 94, there may be an allusion to the eyes painted on the prow of ships, as they used to be in antiquity and still are. τί μαθῶν (826) is rather "what induced you" than

"who taught you." On 37, the distinction of ἀτέχνως and ἀτεχνῶς might have been made; and on 144, Ἀθηναῖοι καλοί, the vase inscriptions should have been quoted, in the light of which this phrase becomes quite Elia-like in its sly mischief. We must not omit to note an excellent critical suggestion on 1093, τὸ φ' ἰλαθ' Ἀρμυδὸν ἄδεται.

Handbook of Homeric Study. By Prof. Henry Browne, S.J. xvi. + 333 pp. With 22 plates. (Longmans.) 6s. net.—A new handbook to Homer is certainly needed, and Mr. Browne fills the gap fairly satisfactorily, within the limits he has assigned to himself. The book is partly literary, partly critical, partly linguistic, and partly archæological; a good deal to get into three hundred pages, and not to be done at all but in brief. The grammatical section, for instance, which includes a sketch of Homeric dialect, is very short indeed, and does little more than give a taste of the subject. As an introductory sketch, however, calling attention to the salient principles, this is good; but there is a serious lack in the absence of a few references to books which the student should use to carry on his study. The references in footnotes are not sufficient for this.

The other sections of the book are more complete. From the literary standpoint, Mr. Browne examines the Homeric poems, the Cycle, and their relations; the textual criticism of Homer; the original dialect, and the various theories about it which have been held; the authorship; Homeric life, social, religious, and commercial; the Homeric people and their origin. In all these subjects, bristling as they do with controversy, Mr. Browne strives to steer a safe course. His views are generally sane and reasonable; if anything, he is too fond of a comparison, and tries sometimes to reconcile the irreconcilable. Thus his attempts to explain the relation of cremation to burial, or to unite Munro, Ridgway and Reichel in one happy family, are not so successful as they are well meant. However, he is quite firm, blinks no difficulties if he does make light of some, and, as he himself says, tries to give his readers the means of solving the difficulties rather than a cut-and-dried solution of his own.

When controversies are not so fierce, he gives a most useful summary of knowledge. Such is his account of the Alexandrian critics and of the MS. authority for Homer's text, and such is his summary of the evidence of the composite character of the poems. We may specially commend his tabular conspectus of this section of the work; a pupil will learn in five minutes from this what he might take hours to get from books. The illustrations are good, and (if we allow Mr. Browne's standpoint in the Mycenaean question) well chosen.

The Works of Horace. The complete Latin text with Conington's translation. (Bell.) 197 + 307 pp. 5s. net (leather).—We lately noticed Messrs. Bell's edition of the later part of this book, containing the "Satires" and "Epistles." To this the publishers have now added the "Odes." We have little to add to our former notice. Dr. Gow's text is good, and Conington's translation is also good. If he is better in the "Satires" and "Epistles" than in the "Odes," that was to be expected, since a translator of the "Odes" has a task of almost insuperable difficulty. But this volume is a delightful treasure to the lover of Horace, and we hope it will have a large sale. We do not like the binding, but that is a matter of taste.

English.

Sydney Smith. By G. W. E. Russell. 241 pp. (Macmillan.) 2s. net.—The question suggested by reading these pages is whether any life of Sydney Smith could be made uninteresting, however poor the skill of his biographer might be. For this volume it can only be said that Mr. G. W. E. Russell has

achieved one of his best literary performances in writing it, and it is distinctly a valuable addition to a renowned series of monographs. The picture of Sydney Smith is complete and faithful, and will do a great service in keeping before the reading public an admirable portrait of a personality which is still memorable by the jests for which Sydney Smith achieved an undying reputation, but of which the more serious aims are dropping out of public recollection. Having recounted the early life of his subject—his marriage, his connection with the *Edinburgh Review*, and noted his poverty as a young literary parson in London, bubbling over with wit which was no more acceptable in clerical circles then than it is to-day ("it is like throwing a man into the river with his hands tied and telling him to swim," said Sydney Smith of his condition when the limitations of his career became plain to him)—Mr. Russell devotes serious attention to Peter Plymley's Letters, and discloses more of the private history of Spencer Percival than is generally known. With singular appositeness to the needs of our own day, Sydney Smith appears to have been struck by our military shortcomings. "I do not know any nation in Europe so likely to be struck by panic as the English; and this from their total unacquaintance with the science of war." The quotations which might be made from these pages are an endless series; but apart from the brilliance of his mirth, to which his biographer does ample justice, Sydney Smith was a man of immense practical ability; of a sincerity which was not the less conspicuous because he had limited and imperfect sympathies for the practical outcome of many of his own doctrines, and because he took life easily after going to St. Paul's; and possessed of a wonderful power of work in literary channels, varied by his "life-long fancy for dabbling in medicine." His philosophy of life is worth pondering: "If life is to be, then it is common sense to amuse yourself with the best you can find where you happen to be placed. . . . In short, if it be my lot to crawl I will crawl contentedly; if to fly I will fly with alacrity; but as long as I can avoid it, I will never be unhappy." It was this delicious sanity which made Sydney Smith what we find him in these engaging pages.

Scott's Talisman. Edited by Henry William. xlii. + 481 pp. (Dent.) 1s. net.—For the number of pages it contains and the price, this edition of Scott's famous novel is a marvel; but its inclusion in the well-known Temple series makes for the strengthening of the reputation which this series has already secured. The illustrations are fewer than usual, being confined to a frontispiece, but the editorial work has been well done, and the introduction is pleasantly written with the view of saying as much as possible about Scott in the smallest space compatible with a complete account of his life and fortunes. The editor's notes follow hard upon Scott's own, and considerations of space have evidently dictated their printing in rather small type. This is the only fault to be found with them, otherwise they are full and clear, and are evidently the work of a competent scholar. Many of them display acquaintance with a fund of recondite information. Praise must also be given to the brief but serviceable glossary, which concludes an elegant and useful edition of a never-hackneyed subject.

Selections from Shakespeare. By Arthur Burrell. xii + 255 pp. (Dent.) 1s.—This series of Shakespeare readings has been well selected, and although it might conceivably only be intended to form an elegant reading-book, it has an educational plan of another kind, and for the most part is designed to supplement the teaching of English history and the use of the avowed historical reading-book. Mr.

Burrell does not say so, but he might well have laid to heart Emerson's saying about the value of Shakespeare for a true teaching of English history. He has, however, found "that an intense interest is added to the history lessons if the dramatic picture be called up." Hence he makes selections in chronological sequence from King John, Richard II., Henry IV. (only three extracts), Henry V., devoting a liberal amount of space to Falstaff, King Richard III., and Henry VIII. A more general selection for the non-historical plays follows, which is equally commendable. A number of isolated speeches and some of Shakespeare's songs, with a short glossary and explanations, concludes this useful little collection. We think that the editor has put himself in the way of achieving a really noteworthy aim in compiling this book, and accordingly we commend it to attention.

The English Works of Francis Bacon. Vol. I. 176 pp. *The Novels of Jane Austen.* Vol. I. 247 pp. Edited by Sidney Lee. (Methuen.) 6d. each.—These are two paper-covered volumes in the new Standard Library. It is to aim at including both books of classical repute which are already accessible in various forms, and also some rarer books of which no satisfactory edition at a moderate price is in existence. A valuable consideration which should weigh with purchasers of this edition is the purer unabridged text which is one of the primary objects of the series. Bowdlerising may be a necessary procedure in educational editions, but it is a nuisance all the same; and this series is not educational. Hence the only editorial matter is supplied by Mr. Sidney Lee, and it is never cumbersome. The type also is extremely legible. These volumes commend the idea of this series to us in a most favourable way.

Robinson Crusoe. 127 pp. *Napier's Battles of the Peninsular War.* 128 pp. *Drake's The World Encompassed.* 128 pp. Edited by Dr. W. H. D. Rouse. (Blackie.) 8d. each.—In these three little booklets their editor continues for the most part his excursions in search of novelty outside the ordinary track of school editions. In "Robinson Crusoe" it will not, of course, be contended that he has found it; but he has in this case managed a careful and skilful abridgment of that immortal story which gives the gist of it all in about one-third of the space it usually takes. The book of battles gives three only, namely, Corunna, Talavera and Badajos; it is intrinsically interesting, and brings to the notice of school children a book of immense worth to which they may turn in after years. To include Drake in this series of authors is a distinctly happy idea, and this book will add to the enthusiasm of those who study it for one of the greatest of Englishmen in an age which produced many such. The short introductory essays which Dr. Rouse prefixes to each little volume are on the scale of the whole series; but they are careful and capital in equal measures. This publishing venture is wholly to be commended.

Selections from Spenser. By Miss G. B. Sellon. 31 pp. (Blackie.) 2d.—This booklet has been prepared with great care, and small as it is, it contains some of Spenser's best verses. The seventeen stanzas from the "Faerie Queene," for instance, could hardly have been bettered as examples of Spenser's workmanship at its best. The inclusion of the Prothalamion also is happily conceived. There are a brief introductory sketches of Spenser's life and works and equally brief notes, but this edition deserves commendation on every ground.

King Lear. Questions and Notes. By B. C. Briggs. 56 pp. (Gill.) 1s.—The valuable little Dinglewood Shakespeare

Manuals have not yet come to an end, though it is some time since we saw the last of them. The questions here devoted to each of the acts of this wonderful play are in three divisions. First come general considerations; then matters of context and language; lastly, the grammar and prosody of the play. The notes are extremely valuable, and this little manual properly used may serve a good end in preparation for the Oxford and Cambridge Local Examinations.

Mister Dormouse and other poems. By Geraldine Seymour. 45 pp. (Nutt.) 2s. 6d.—We venture to congratulate the authoress of these verses upon a successful achievement. It is not everybody who can write children's verse which shall steer equally clear of nonsense and goody-goody affectation, and with a full comprehension of the heart of childhood unite perfect literary skill. But Miss Seymour has done it, and if we compliment her first upon the technical facility with which she manages her lines, it is because she evidently has great powers in this direction. For the most part, she seems to like long lines almost as affectionately as Mr. Rudyard Kipling or Mr. Swinburne; but, whatever be the length, she has a plentiful store of dexterity in managing her rhythm, so that no two of these little poems in succession are in the same metre. When she tries the short line she is equally successful; and as for her subjects, we believe they will commend themselves to every child whose good fortune it is to possess a copy of this elegant and charming volume.

The Arnold Prose Books. Nos. 1-24. 1-43 pp. (Edward Arnold). 2d. each.—We should like to know what suggested to the publishers the idea of this admirable series, and we should be very much gratified if we could by any words of praise get the series into general use. "The books have been prepared," says a brief advertisement, "to meet the requirements of teachers who wish to give their pupils a wider view of English literature than is afforded by the reading of one or two longer texts." Can it be that there are teachers who can do what they "wish"? And are we, at last, getting nearer to the desirable day when we shall read Goldsmith, and Malory, and Motley, in schools instead of reading about them? The writers represented are Goldsmith, Froissart, Lamb, Bacon, Malory, Gibbon, Johnson, Carlyle, Macaulay, Burke, Addison, Steele, Boswell, Kinglake, Leigh Hunt, Southey, Barrow, Motley, Napier, Prescott, Froude, Thackeray, Washington Irving, and Emerson. And there are illustrative extracts from these writers for four shillings, or if cloth covers are preferred, for eight shillings. If a teacher with an advancing class buys one of these two-penny books he (or shall we say "she"?) will buy all. The biographies are at the end of the booklet, and there are hardly any notes. Page 49, *i.e.*, the inside cover, might well contain a closely printed "preface" on the method of using this little library.

Geography

Bacon's Excelsior Memory-map Atlas and Text-book Combined. Twentieth Century Edition, 1904-5. (Bacon.) 3s. 6d.—This edition has been revised throughout under the direction of the Rev. E. F. M. MacCarthy, of Birmingham. After some introductory pages on how to draw "memory maps," on the meaning of some of the chief geographical terms, and on the area and population of the chief countries of the world, the work proper begins. This consists of a map to each double page, with notes and lessons facing each map. The maps comprise four special maps (industrial and railway) of England and Scotland, and seventy-four of Bacon's Excelsior Memory-maps. The publishers claim for the work that it is "specially

adapted for the use of pupil teachers, candidates for the King's Scholarship, Certificate and Civil Service examinations, and also for use in secondary schools." The main criticism we have to make is that there are far too many names for memory-maps. In one of the maps—the Amazon Basin, for instance—occur names which surely have been selected more for the purpose of filling up blank spaces than for any intrinsic value either geographic or educational. Such names are naturally not annotated on the page opposite, and the "pupil teacher," or "candidate for the King's Scholarship," is left to guess why they are worth remembering. If all such names were ruthlessly cut out in a future edition, we suggest that the book would better serve its purpose. Other defects in detail, we think, are the utterly inadequate and ineffective "physical" maps (of the "Western and Eastern Hemispheres," for instance), the absence of all attempts to contrast highland masses and lowland plains—for the thick black lines which alone do duty for mountains are really very misleading on this point—and the use of the same sized dot for town and village alike. The industrial maps of England and Scotland are plentifully supplied with aggressive but unconvincing labels; they defeat their own object by attempting to show too much. Still there is much good work, though necessarily of the cram type, and examinees must "cram," whether they are studying by themselves or under the guidance of expert teachers. The book is nicely got up, well printed, and of a convenient shape. For a future revision we commend the following points as worthy of consideration:—Huddersfield is not on the Midland Railway system; India has now a north-west frontier province, and South America a new State (Panama); North-west Provinces and Oudh are now known as the United Provinces; Sucre is not the capital of Bolivia; the United States do not "possess" Cuba; the Mount Brown of 16,000 ft. in Canada is a fiction; Mount McKinley is worth insertion in North America; and in all books catering for examinations an index should be supplied.

Philips' Chart of Geographical Terms. (Philip.) 14s.—This chart may be obtained either on a single sheet mounted in cloth, with rollers, and varnished, 68 in. by 54 in., or in the familiar form of a "wall-atlas" in four sheets. We prefer it as the latter. As such it forms Set I. of Messrs. Philips' Comparative Wall Atlases. The subjects comprised are coloured pictures of an imaginary landscape, a school and its neighbourhood, and ground plans and maps to correspond. These are succeeded by illustrations and maps, all coloured, showing the youthful geographer how to ascertain direction by means of the sun and how to use a compass, where to look for the temperature zones and the great divisions of land and water upon the world's surface, and what the earth appears to be like in space. This summary of the contents explains the whole scope of the venture: its object is to place in graphic form before the beginners the salient points of geography which the teacher works up for his youngest classes. A short set of useful notes for the teacher is issued with the chart, calling attention to some of the points which the pictures and maps specially illustrate. A good teacher should make excellent play (and work) with this material, and a receptive child would have little difficulty in comprehending the first principles of a map with these comparisons before him.

The Globe Geography Readers—Intermediate. By Vincent T. Murché. 1-200 pp. (Macmillan.) 1s. 9d.—Thoroughly interesting this book is, and on right lines; but it contains too much. Chapter I., on "the character of the country," should, in our opinion, occupy a volume; and a goody number of such volumes would give us a history of England. There are signs that a revolt against history teaching is in progress; perhaps

the publishers will aid it by producing a cheap history of England in a large number of small volumes written by experts and rewritten by schoolmasters.

Science and Technology.

Repoussé Metalwork. By A. C. Horth. xii. + 103 pp. (Methuen). 2s. 6d.—This little book contains a series of eighteen graduated exercises illustrative of the use of the tools and appliances used in repoussé. Many of the designs are excellent and the value of the book is enhanced by photographs from actual examples, while working drawings are given for all the exercises. To be successful in this work the operator should possess artistic instincts and manual dexterity. The latter may be acquired by practice under the guidance of a good teacher, to whom the book should be helpful. We have often noticed repoussé work in which the design is excellent and the workmanship beyond reproach so far as the carrying out of the design is concerned, and yet the whole effect has been spoiled by indifferent workmanship in the securing together of the various parts. As most students finish the work completely themselves, they should be taught how to carry out simple exercises in soldering, brazing and riveting, when much that is amateurish in this respect would disappear. It is a matter of some regret that this point is not emphasised in this otherwise excellent book.

Mathematics.

Introduction to Analytic Geometry. By Percy F. Smith and Arthur Sullivan Gale. viii. + 217 pp. (Ginn.) 5s. 6d.—Though the authors state that they have intentionally avoided giving the book the form of a treatise on conic sections, yet, in the parts that deal with plane coordinate geometry, the method is at bottom the same as that to be found in current treatises on analytical conics. The exposition is, however, more detailed; it is characterised by simplicity and clearness, and is sufficiently extended in its range to give the student a good conception of the analytic method. We think it possible that the introduction of graphical methods at an early stage of the pupil's mathematical training will soon make it quite feasible for text-book writers to reduce considerably the number of pages given to elementary processes in coordinate geometry, and to develop the geometrical applications of the analytic method. In this book the stress is laid on the analysis rather than on the geometry, though, of course, the geometry is not altogether neglected. While we gladly recognise that the authors have succeeded admirably in carrying out this design, we wish they had included in their plan a more systematic development of the geometrical properties of the curves represented by the equations. The book includes two excellent chapters on three-dimensional coordinates. It is, in our judgment, very desirable that the elements of coordinate geometry of three dimensions should be taken up before the student proceeds to the more advanced parts of plane analytical geometry, and a simple exposition, like that of chapters x. and xi. of this work, would be a welcome addition to current text-books on analytical conics.

Elementary Practical Mathematics. By H. A. Stern and W. H. Topham. viii. + 110 + viii. pp. (Bell.)—After two chapters dealing with Contracted Arithmetical Processes and Graphical Methods respectively, the book takes up in successive chapters the measurement of length, angles, mass, area, volume, and specific gravity, the last chapter treating of the calibration of tubes and graduated vessels. The selection and description of methods are good, and the various instructions are clearly expressed, while useful hints and suggestions are frequently given. This book is stated to form the first nine chapters of a larger work. It contains much really useful and well-arranged

material for the experimental side of a mathematical course, though we think that the amount of space given to graphical methods in Chapter II. is excessive in [view of the universal introduction of graphs in elementary teaching.

Easy Graphs. By H. S. Hall. vii. + 64 pp. (Macmillan.) 1s.—A very simple introduction to the subject, treating with considerable detail the linear graph and its applications and discussing briefly the quadratic function. We heartily concur in the following sentence from the preface: "The growing fashion of introducing graphs into all kinds of elementary work, where they are not wanted, and where they serve no useful purpose—either in illustration of guiding principles or in curtailing calculation—cannot be too strongly deprecated."

A Notebook of Experimental Mathematics. By C. Godfrey and G. M. Bell. 64 pp. (Edward Arnold.) 2s.—For teachers who wish to combine simple experimental work with lessons in mathematics this notebook provides an excellent guide. Part I., which deals with measurements of length, area, volume, weight, and simple experimental work in hydrostatics, is taken, with slight modifications, from Mr. Ashford's "Preliminary Course of Practical Physics," and the spirit and idea of the whole book are stated to be identical with those of the book referred to. It is intended that the pupil should gain some concrete conceptions which he will need for a clear comprehension of subsequent lectures, and a certain familiarity with the elementary methods of measurement; but in the earlier stages no demands are made on his powers of description. The course laid down includes experimental work in mechanics, but not in heat, electricity, or magnetism. The general design seems good, and the instructions are brief but clear. A fair trial on the lines laid down in this notebook should go a long way to determine the value of combining the teaching of mathematics with elementary experimental work.

Geometrical Conics. By G. W. Caunt and C. M. Jessop. 80 pp. (Arnold.) 2s. 6d.—The leading properties of conics are investigated geometrically. The conics are treated as sections of a cone, and in the development of their properties great use is made of projections and the polar properties of the circle. The book is an easy and interesting introduction to its subject.

Pitman's Scheme B Arithmetic. Standard I. By T. W. Trought. 36 pp. (Pitman.) Paper 2d., cloth 3d.—Simple, straightforward questions, clearly printed. We do not quite see the arithmetical bearing of an example such as "Tell a story about $14 \div 2 = 7$."

The "Council" Arithmetic for Schools. Part VI. By T. B. Ellery. 269-332 pp. (Black.) Paper covers, 4d.; cloth, 6d.—Takes up long measure, square and land measure, cubic measure, decimal fractions, proportion, simple interest, and mensuration of a simple kind, with some examples on the metric system.

Miscellaneous.

Problems of a Scottish Provincial Town. By J. Howard Whitehouse. 134 pp. With 10 illustrations. (Bournville: the St. George Press.) 3s. 6d. net.—Though this book is concerned primarily with Dunfermline, it should prove, as the author hopes, of interest and value to civic workers everywhere. Dunfermline, with its princely income of £25,000 a year from the Carnegie Trust, has a unique opportunity of solving, if they are capable of solution, those great problems that surround with increasing perplexity city life everywhere. The author acted for some time as secretary to the Carnegie Trust, and the present volume puts forward a constructive policy for the future

development of the operations of the Trust. The proposals as a whole seem framed on sound practical lines, and, if somewhat ambitious for the average municipality, are by no means utopian in view of the resources of the Trust. Mr. Whitehouse, wisely recognising that many social problems can never be solved so far as the present generation is concerned, would concentrate most of his efforts on the better training of the young. Plato's first and greatest commandment to the rulers in the "Republic" was that they should be good guardians of the young, and that they should surround them with everything that was good, beautiful, and pure, so that they might in their lives *imitate* those qualities. The Carnegie Trustees might well make this their first and last commandment also, and in the admirable schemes put forth in this volume they will find a remarkably good basis for a beginning. One of the best chapters in the book deals with the formation of a "Boys' Club," though "Boys'" is somewhat of a misnomer, as it is intended for youths from fourteen to twenty years of age. The club is designed to carry on the moral training of the schools, and look after the young workers during the critical period of transition from boyhood to manhood. The first object of the club, therefore, is to provide a place "where lads can repair as to a well-ordered home, secure always of welcome and sympathy, and where they may be gradually brought into a world of new ideas." Much stress is laid on the recreative side of the club, not so much because it is valuable in itself, but as a means to an end, a bait by which to secure the sympathy and confidence of the lads for greater ends. The author has a word of praise for the standard of education in the schools of the town, and for the loyalty and zeal of the teachers. He directs attention to the bare and repellent nature of the class-rooms, and his plea for the decorative treatment of the school interiors generally will be approved by all who believe in the influence of environment in building up character.

Religious Teaching at Home. By L. H. M. Soulsby. (Longmans.) 4d.—Miss Soulsby is well known as a writer for girls, and her books have a deservedly wide circulation. The present booklet addressed to mothers contains good advice on a difficult question; but the gist of all the advice is this—make your religious teaching real by living a kind, sympathetic, religious life—never teach what one day must be unlearned—do not give up belief in the efficacy of prayer. The appendices are useful, and contain lists of books. The following question, however, obtrudes itself, "Do parents, before or while attempting the religious education of the young, think out for themselves their own belief and their own position as regards: (1) the historical value of the Bible; (2) the moral teaching of the Bible; (3) the relation of Biblical inspiration to the inspiration of the Church?" Girls often start life, *i.e.*, they reach the age of eighteen, with no clear "accidence" of religion on which the superstructure of the language may be based.

Brahms. By Herbert Antcliffe. 56 pp. (Bell).—Mr. Antcliffe has worked within considerable limitations as to space, and within these limitations he has presented a view of Brahms which may be praised as a conscientious and enthusiastic, and yet withal well-balanced tribute to one of the greatest of masters. But the book is defaced by certain slovenlinesses of diction; *e.g.*, "as a song writer he is right in the front rank," and in speaking of Brahms' introduction to Mühlfeld it affirms that "the famous clarinet *quartette*" was written for this artist. Again, in his list of the master's compositions he sets down one fugue and twelve choräl preludes for the organ, whereas one of these twelve was a separate work and was a choräl prelude and fugue, owning quite a separate existence from the later works for the organ. These little inaccuracies mar an otherwise creditable 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 Use of Graphs.

I WAS very pleased to see Mr. Blomfield's letter on this subject in your June number. There is a great danger of teachers and examiners alike running into stereotyped grooves in any branch of mathematics, and I have long foreseen that something of this kind might soon occur in the case of graphs. Personally I dislike the use of the word "graph," which gives the impression that something new has been recently introduced into mathematical teaching. Most graph tracing is nothing more than tracing *loci* of equations—*i.e.*, elementary co-ordinate geometry—and the word "graph" merely appears to signify that only those equations are considered in which one of the variables is expressed as an explicit function of the other.

A real danger seems to arise out of the fact that "graph" questions are apt to be set in examinations of widely differing grades, and thus it may be possible for a candidate to climb up several rungs of the examination ladder without having made much substantial progress between each. In this connection it is important to draw up a brief sketch of the various points which may be dealt with in this connection.

(1) We may perhaps take it that plotting from statistical data represents the most elementary stage.

(2) It is important that the pupil's attention should not be confined to *tracing* graphs, but that he should be taught to interpret them as well.

For instance, questions might be set in which a diagram was given showing the fluctuations in the price of wheat in a given period, and the candidate asked to give a description of these fluctuations in writing. Or, again, he might be asked to write down a time-table of a certain railway train from the given graphic representation.

(3) Plotting on squared paper is useful enough in the elementary stages, but when complicated functions have to be represented the most important thing is that the zero, infinite and turning values, the changes of sign, and so forth, should be correctly shown, and for this purpose rough sketches should be regarded as sufficient in the majority of cases. The mere representation, correct to scale, of a small arc of a curve is not of much value except as an early exercise in graphs. Undoubtedly it is far harder for schoolboys to sketch correctly the shape and peculiarities of a graph than to plot part of it, and possibly there may be a great difficulty in taking this work as a sequel to mere plotting. I would suggest that when the items in a list such as that suggested by Mr. Blomfield have been disposed of, graphs might be left over till the pupils have reached sufficiently mature years to tackle the difficulties connected with "change of sign in passing through infinity," and such matters.

Before leaving the subject I would call attention to an important use of graphs in connection with the binomial theorem. It is greatly to be regretted that boys are often required to learn that difficult theorem at a stage when they are unable to master the subtleties connected with convergency and divergency, with the result that at far maturer years they still revel in a reckless luxuriance of divergent expansions. Infinite series are a dangerous tool to place in the hands of a beginner, but the use of graphical methods would greatly mitigate the evil. Thus the equation $y = (1+x)^{\frac{1}{2}}$ represents a parabola, but if for the left-hand side we substitute the corresponding expansion

sion in ascending powers of x , the new equation will only represent that portion of the parabola which lies on the positive side of the axis of x between $x = -1$ and $x = +1$.

With Mr. Blomfield's last remarks I cordially agree. Mathematics is a big subject, and no tinkering with syllabuses will make it possible for a boy to learn more than a limited amount in a limited time. The ideal state of the community would be one in which everybody's mathematical calculations were done by professional consulting mathematicians in the same way that everybody's legal business is now done by barristers and solicitors. It would be far easier to train boys so as to make every man his own lawyer than to make every man his own mathematician. But as long as things remain as they are at present, it is useless to expect that a reform of mathematical teaching will make a silk purse out of a pig's ear.

Plas Gwyn, Bangor,
June 7th.

G. H. BRYAN.

Spelling Reform in France.

I SHOULD like to point out, referring to your May number, that most of the changes proposed are contrary to internationality; that is, they would destroy the resemblance between the spelling of scientific words in the international languages, French, English, German, and Latin. On the other hand, French children commencing their letters do not begin by reading scientific or technical terms, or about *rhetoric* and *synecdoche*. Physicians would not care to confound *cyllose* and *cillose*. Moreover, a distinction between new formations and old, which is apparently contemplated, would render the spelling of French scientific terms dependent upon the date of their introduction into the language, creating a difficulty for Frenchmen and foreigners alike. It is a pity that they do not abolish y as a vowel for all but scientific terms. Such elementary words as y or *eu* should be spelt phonetically. It would really be simpler for the French to pronounce the y in scientific words as the Germans pronounce this letter.

Yours faithfully,

CHARLES G. STUART-MENTEATH.

THE above interesting letter raises a large question, too far-reaching to be dealt with in anything but a regular article. A real lover of a language should no more desire to see arbitrary changes introduced into it than a historian would deliberately destroy unread a mass of records of almost certain value. Should we in England gain by insisting on spelling *connoisseur* and *Pie-Powder Court* in the modern French way, *connaissanceur*, *Pieds poudrés Court*? or, phonetically, *kone : se : r, pje ; pu : dre kōrt*. In Germany at the present day the desire to avoid any word that a German knowing no language but his own would fail to understand leads the ultra-reformers to adopt many words that are cumbersome and even illogical. For, if the word *Kaiser* may be retained, is it logical to replace *Billet* by another expression (*Fuhrkarte*), which itself contains a component of foreign extraction? The German movement is prompted by genuine patriotism, but it is destroying some landmarks in the language.

The Academy seem to feel something of this sort, for it is expressly stated in the report that to run counter to etymology would certainly not make for internationality.

There are two schools of English reformers of spelling; one the "out-and-outers," the other a moderate party. The former would like to introduce phonetic script and spelling, the latter would confine their alterations to such changes as *dout* (for "doubt"), *det* (for "debt"), which are historically justifiable.

The Academy has taken a middle course with the French reformers, and has probably put a stop to great innovations by lending its support to small changes. The *rapport* of the Academy was drawn up for the Minister of Education. If any further steps are taken in the matter, the Minister will doubtless

issue and circulate a rescript, embodying the reforms he sanctions. In conclusion, we may say that the rescript will most likely be as little regarded in France as are the "grammatical tolerations" of which an old French professor has said, "Nous constatons et nous passons outre."

THE WRITER OF THE NOTE.

A State Department of Education for Ireland.

IN the Irish notes in the June issue of THE SCHOOL WORLD I observe the following sentence: "In the face of the Roman Catholic hierarchy, however, who repudiate the proposal, the time is hardly ripe for a State Department of Education." Whether these words express the view of your contributor, or are, in substance, a quotation from a writer in the *National Review* for May, is not quite clear, but in either case they, in their context, plainly imply that responsibility for the unfortunate continuance of the examination system in Irish intermediate education rests primarily on the Catholic Bishops. I am quite sure the words were written without any intention of giving offence, but in effect the insinuation is offensive and injurious, and devoid of all foundation in fact. May I beg that you will allow me to mention briefly the facts, which I hope will prove generally interesting.

A Vice-regal Commission held an inquiry into the working of the Irish Intermediate System in 1899. The Association of Catholic Headmasters sent an official witness to give evidence before that Commission on their behalf, and one of the most important points it was his duty to lay before the Commission was a resolution passed by the Association in favour of the introduction of inspection into the system. I have no recollection of any corresponding action on the Protestant side. It is true that the resolution was merely passed by a majority, but in the course of the enquiry it appeared that opinion on the question of inspection was most gravely divided in Ireland amongst all classes of witnesses, without distinction of religion, and consequently it is of importance to note that the only body to pass a resolution in favour of inspection was the Catholic body.

Following on the report of the Commission, a Bill was introduced into Parliament which proposed, in a single clause, to give to the Board of Intermediate Education unfettered power to change the system in any direction. The Irish representatives in Parliament, without in any way consulting the Bishops or the Catholic headmasters, decided, as they were perfectly entitled to do, that, on public grounds, it was not desirable to put untrammelled power into the hands of a body so independent of all influence as the Intermediate Board. The result of their opposition was a compromise which limited the powers of the Board to the carrying out of the recommendations contained in a Summary appended to the report of the Commission. The first of these recommendations provided for the retention of the annual general examinations, to which, consequently, the Board are bound by Act of Parliament.

As the recommendations in the Summary included inspection, the Board determined to introduce it as an adjunct and corrective to the examinations, and with the consent of the Lord Lieutenant issued a rule requiring all schools to submit to inspection, and making a substantial bonus of 20 per cent. of the whole school grant depend on the report of the inspectors. For two years the Board carried on a system of inspection, about which it is unnecessary to say any more than that they condemned and abandoned it themselves, deeming it farcical and calculated to bring the whole system of inspection into disrepute. The inspection rule continues to be published, but it has become a dead letter. The explanation of this extraordinary state of affairs is no matter of mere conjecture, it has been published by the Board in their own defence.

The Treasury have refused to allow the Board to provide a staff of permanent inspectors and establish the system on a suitable basis. Money might be thrown away from year to year on a tinkering attempt at inspection which provoked the contemptuous anger of the whole country, but it must not be spent on an efficient and permanent system. Is it suggested that the Treasury consulted the Bishops?

The first ringing note of opposition to a State Department of Education was sounded by the *Freeman's Journal* in criticism of a resolution of the Catholic Headmasters' Association, which that paper erroneously thought was favourable to the idea of such a department. Not only was the opposition not started by the Bishops, it was displayed in such circumstances as showed that, even if their lordships favoured the department, it would be regarded with hostility by nationalist feeling in Ireland.

The reasons why Irishmen, whether Bishops or laymen, would object to a Department of Education controlled from Westminster do not arise here; I am merely concerned to show that, as a matter of fact, the suggestion which called for this letter is quite without foundation.

ANDREW MURPHY.

St. Munchin's College,
Limerick.

[The note is clearly a summary of the article in the *Monthly* (not the *National*) *Review* for May, and the words do not bear the construction put upon them by Father Murphy. I regret that Father Murphy regards them as containing an "offensive and injurious insinuation," for certainly none such was intended. But it is clear that Father Murphy has confused the question of "A State Department of Education" with the Inspection of Intermediate Schools. The repudiation of the former proposal by the Roman Catholic hierarchy is a matter not of insinuation, but of fact, as it has been denounced by a resolution passed by the hierarchy at Maynooth in June of last year and read in every Roman Catholic chapel in Ireland on the first Sunday of last November. The facts as to inspection are another story. As given by Father Murphy they have already appeared in your columns in the Irish notes. The Treasury, *i.e.*, the Government, and not the Intermediate Board, much less the hierarchy, are responsible for the present state of affairs. Father Murphy is, however, inaccurate in supposing that Protestants did not support the introduction of inspection before the Vice-regal Commission. It was supported by the unanimous opinion of the following educational bodies: the Central Association of Irish Schoolmistresses, the Irish Branch of the Teachers' Guild, and the Association of Intermediate and University Teachers. The Protestant Schoolmasters' Association did not give evidence.—YOUR IRISH CORRESPONDENT.]

The London County Council Scheme of Salaries.

IT may be as well to point out that under the new London County Council scheme of salaries, described in the June number of *THE SCHOOL WORLD*, the equality between head teachers of girls' and infants' departments will in some cases be only nominal. The accommodation in infants' departments for working purposes is calculated on the 8 sq. feet basis, but for the purpose of fixing the salary of the head teacher it is to be calculated on the 10 sq. feet basis, thus reckoning it as smaller than it really is. For instance, a department whose present accommodation is 460, which sounds like Grade III. in the new scheme, will be reckoned, for salary purposes, as 368, which places it in Grade II. Of course, even then, there is a rise in the maximum salary of the head teacher in question, but where is the so-called equality?

HEADMISTRESS.

Bright Story Readers.

ON page 236 of the issue of *THE SCHOOL WORLD* for June is a very appreciative notice of our "Bright Story Readers," Nos. 42, 52, and 60, for which we are much obliged. The notice concludes with the following words: "We should like to know if 62 of these Classics have been published; the list at the back of the book is incomplete."

We beg to say that up to now only three books in each grade have been published, but that a large number of others are in preparation. The vacant numbers in each grade have been left open for additions, on the principle that any of the ten's numbers would represent Grade I, the twenty's, Grade 2, etc., leaving vacant numbers for additions, and that the numbers before ten would be simple books introductory to the series. The vacant numbers will be filled up as quickly as possible until ten books in each grade have been placed on the market.

E. J. ARNOLD & SON, Ltd.

Leeds.

The Examination Bugbear.

WITH the summer term and approach of the various outside examinations, numbers of our provincial grammar-schools are thrown into a state of unusual excitement and general disorganisation (especially with reference to the time-table), which is surely subversive to all the best interests of education. Boys may not have reached the required stage in Latin, so Latin is ruthlessly cast aside for more paying subjects. For this interesting state of affairs we are chiefly indebted to the new London Matriculation regulations. In modern languages, before a boy has had time to complete and digest a single masterpiece he is compelled to spend his time over everlasting selections, and to develop his machine-like propensities with weekly grammar papers. How is the brain to develop satisfactorily under such a system? Would it not be possible for the authorities to take some combined action in the way of suppressing, where desirable, the fetish of annual outside examinations? At any rate, it would be felt to be a great advantage all round if they could be suspended until the work throughout had attained such a standard as rendered them ordinary incidents not requiring any special alterations in the schedule of work.

C. WILLSON.

The School World.

A Monthly Magazine of Educational Work and Progress.

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SIXPENCE.

STUDIES IN SCHOOL MANAGEMENT.

VI.—HOLIDAY TASKS.

By the Rev. H. B. GRAY, D.D.
Warden of Bradfield College.

"HOLIDAY tasks or no holiday tasks, that is the question!" which I presume the writer of this paper is set to answer; and I suppose there is no article of educational faith on which more different judgments have been passed by parents and pedagogues alike. Everything depends on the point of view from which these "tasks" are regarded. I will enumerate some of these points of view.

Those who argue in their favour maintain, and with undoubted force, that it must be physiologically and hygienically unsound that a growing brain should lie altogether fallow for four, five, six or even seven weeks consecutively, *unless* the strain on that growing brain has been abnormally severe for the twelve or thirteen weeks of term time which have preceded the weeks of fallowness, and unless, therefore, a long period of repose is necessary to restore the impaired mental energy. In other words, if such an abstinence from brain work be indispensable, there must be something wrong with the hours and system of boys' education as at present established to provoke and necessitate such an abnormally long period of recuperation.

And this opens the door to a wider consideration. Are the present divisions of the school year into three (more or less) equal terms of thirteen weeks each, with the three corresponding intervals of four weeks, four weeks (alternatively five weeks and three) and seven weeks, *ideal* distributions of educational periods, having regard to hygienics on the one hand and mental culture on the other? They are confessedly not the *final* divisions on which experts have agreed, when it is remembered that not thirty or forty years ago the divisions into "halves" and "quarters" with corresponding long and short holidays were almost universally in vogue. The fact is that the divisions of school terms have corresponded from time to time not with any ideal conclusions on the point, but with the exigencies of the period and the place.

Up to the middle of the nineteenth century, when the county grammar schools absorbed all the

classes of the youth of the district, it was practicable to arrange for *frequent* and *short* holidays, inasmuch as the *clientèle* lived within a three or four hours' radius, at most, of their educational home; but when the development of the railway system drew away the wealthier class of county people from the local school to fashionable educational centres, when Eton and Harrow became within a quarter of a day's journey from Yorkshire and Lincolnshire, there came a simultaneous counter-movement in respect of holidays. "Terms" took the place of "quarters" and holiday-times became longer and less frequent.

In the writer's judgment, this was a movement in the wrong direction educationally, involving as it did an unnaturally long time wherein the boy-mind could lie fallow. Holiday tasks were "invented" as an artificial and very clumsy expedient to counteract this "fallow time."

Again, there has been another movement visible from the middle of the nineteenth century onwards, which has brought about the particular form which holiday tasks have assumed, at any rate in several notable schools. The abnormal extension of the competitive system has had its most conspicuous effect in the two ancient universities. A great proportion of the prizes therein has been reserved for those who can show an extraordinary proficiency in the two ancient languages. Hence a tendency to absorb most of the educational period at command in the study of those two tongues—especially at the more conservative and historic of our public schools. English literature, which was studied to some effect in the eighteenth century, was pushed into the background in the nineteenth. A brilliant inspiration then seized the rulers of these schools, that the interests of this neglected subject might be served in the *hora subseciva* of the Long Vacation.

It was thought, moreover, that the parental mind, either misty, or ignorant of the classics, might be attracted by the fact that its sons were expected in the holidays to study a tongue which it could itself understand, even if it could lend no efficient help. In some cases even it might have thrown dust in its eyes, and it might be led to believe in the fiction that the boys were engaged in similar studies during the term. Whatever, however, the motive of this particular form of holiday task, the result, so far as it goes, is good.

On the other hand, neither the parent nor the schoolmaster is really in earnest in the matter. There is an augural wink, indeed, in the eye of the pedagogue. The more cynical regard the holiday task as a sort of breakwater, to be employed by the tutor against the seething discontent and *ennui* which becomes boisterous in many boys after the third or fourth week of a forced "fallowness." It is quite a matter of common remark on the part of the parent to the headmaster that he has helped his boy in his "English" task towards the end of the holidays, and he hopes and thinks that "Dick" will render a good account of himself. But to other parents it is a desperate nuisance, and they openly express their contempt for the "order," which in five cases out of six resolves itself into getting up the task on the last two or three days before return.

I have been speaking hitherto of the holiday task of the ordinary boy who has no external examination bogey in front of him. Far otherwise, of course, is it with the Army or Navy competitor, or candidate for the London University matriculation, or for Oxford and Cambridge scholarships, and such like examinations. In that case the enforced length of the vacation is utilised to carry on, with the aid of a more or less efficient holiday tutor, the work of the term, and the holiday task is so arranged as to avoid a break in continuity, while the fact that such continuity of extra work has resulted in no deleterious effect on the mind of the worker opens the door to serious reflections of a far-reaching character.

Is it at all certain that the present arrangement of three terms, and the substantial vacations which follow them, are the best or the final "compartments" of time into which the educational periods of stress and rest can be divided? As long, of course, as the "hotel keeping" system of public school prevails, it would be non-economical to split the educational year into smaller and more numerous divisions. But ideally, whether the matter be considered from the point of view of masters or of boys, there is little doubt in the mind of the writer that no consecutive period of work at ordinary schools should last more than eight weeks, that there should be five of such equal periods, and that there should be five correspondingly short periods of enforced vacation of from fourteen to twenty days apiece. Every schoolmaster will bear witness to the fact that, after nine or ten weeks at most, the work of the majority of the masters, as well as of the boys, becomes stale and unprofitable, and when the vastly increased means of communication which has been the feature of the last twenty years is taken into account, the practical difficulties of such a redistribution of educational time are little or nothing. In such a modification of the educational year the holiday task would naturally have no place.

MISS PHILIPPA G. FAWCETT has been appointed principal assistant in the office of the Executive Officer of the Education Committee of the London County Council.

SOME REFLECTIONS OF A PUBLIC SCHOOLMASTER.

By J. H. FOWLER, M.A.
Clifton College.

IT is possible for a schoolmaster who believes in humane letters as the best form of education to rise from the attacks of Sir Oliver Lodge or Prof. Ray Lankester upon English public-schools and the older Universities with his withers unwrung. He may, I hope, be forgiven for feeling, with all respect for those eminent controversialists, that his ideals are so different in some ways from theirs that the criticism leaves him unmoved; the aims in view are unlike; it is not to be expected they should approve his methods. It is obvious, however, that such an attitude of indifference is no longer to be justified when the criticisms proceed, not from the outside and from avowed enemies, but from within and from distinguished champions of the humanities. There is little room for self-complacency left after one has read—as every public schoolmaster ought to read—Canon Lyttelton's article in the June *Nineteenth Century* on the training of teachers, Mr. Benson's article in the May *National Review* on "An Eton Education," and the anonymous diary of a classical schoolmaster lately issued under the title of "The Upton Letters".

"Is there a country in the world except England where it could be commonly supposed that a man is the better for being ignorant?" asks Canon Lyttelton with pardonable impatience, after mentioning the easy indifference with which our English schoolmasters dismiss as useless all investigations into educational theory and practice. The men who criticise have not read, he says, a line of the works he has been speaking of "except perhaps, Stanley's life of Arnold." The statement is almost literally true, and it is a severe indictment, perhaps of our national failings, certainly of the scholastic profession in England. We are far too easily satisfied with traditional methods, and the man who has wit enough to command the respect of his pupils is apt to suppose he has nothing more to learn.

Passing from Canon Lyttelton to Mr. Benson, I find that a long experience of Eton in the double capacity of boy and master has led to the deliberate conviction that "the thing could not be better organised, but it is like a great factory for weaving ropes out of sand."

"The present system has been framed in a spirit of despair; . . . the result is intellectual confusion, waste of labour and highly unsatisfactory results." And when I turn to "The Upton Letters"—a book that seems also to reflect a long experience at Eton, whether Mr. Benson's or another's, it is not for me to say—I find this most disheartening picture of the life of our public schools:—

1 "The Upton Letters." By T. B. 331 pp. (Smith Elder.) 7s. 6d. net.

I declare that it makes me very sad sometimes to see these well-groomed, well-mannered, rational, manly boys all taking the same view of things, all doing the same things, smiling politely at the eccentricity of any one who finds matter for serious interest in books, in art, or music; all splendidly reticent about their inner thoughts, with a courteous respect for the formalities of religion and the formalities of work; perfectly correct, perfectly complacent, with no irregularities or angular preferences of their own; with no admiration for anything but athletic success, and no contempt for anything but originality of ideas. They are so nice, so gentlemanly, so easy to get on with; and yet, in another region, they are so dull, so unimaginative, so narrow-minded. They cannot all, of course, be intellectual or cultivated; but they ought to be more tolerant, more just, more wise.

Happily I am sure that the picture is not true as it stands of the public school I know best. There, at least, it is not the fashion to regard "serious interest in books, in art or music," as nothing better than eccentricity; nor is it true that the boys have "no admiration for anything but athletic success." Yet who that knows much of English public-schools or English public-schoolboys would dare to say that he does not recognise the picture as a faithful portrait of a type to which they are ever tending to approximate?

There is another side to the picture, even if we accept the account of "The Upton Letters," and, as I think it important that it should not be forgotten, and it is forgotten by many of our critics, I should like to mention before I go any further that it has found admirable expression recently in a pamphlet by Mr. J. L. Paton ("English Public Schools," G. Allen, London, 6d. net). The friends of the Highmaster of Manchester Grammar School will not suspect him of admiring any ideals of life that are lacking in strenuousness, and no stronger testimony to English public-schools could be found than Mr. Paton's judgment, after his boyhood at Shrewsbury and his early manhood at Rugby, that the great need of English middle-class education to-day is the leavening of the grammar-schools with the splendid spirit of brotherhood that animates the public schools. Mr. Paton's complaint against the great schools is not that they are not good in themselves, it is merely that they are the schools of a class, not sufficiently in touch with the national life.

But it was not on deserved praise so much as on justifiable censure that I had meant to dwell. The wise fool in "Twelfth Night" avowed himself the better for his foes and the worse for his friends. "My friends praise me and make an ass of me; now my foes tell me plainly I am an ass, so that by my foes I profit in the knowledge of myself, and by my friends I am abused." So, whilst we distribute Mr. Paton's excellent pamphlet amongst the parents of possible pupils, let us the rather turn for ourselves to the strictures of "The Upton Letters." If the prevailing temper of English public schools be at all as this book describes it, can we do nothing to improve it? It is not made by the masters, of course. The tradition of the schools is stronger than they. The pressure of the

old boys is strong also. It was not the least intellectual of public schools whose old boys, at their annual conclave, recently offered as their one contribution to the school's welfare a solitary resolution asking the headmaster to appoint a permanent cricket master on his staff. And, again, there is the influence of the home and the parents' ideals, which often enough are not what they should be. We may be sure that a nation has the schools, as well as the government, that it deserves. But the masters are certainly not guiltless in the matter. At "Upton" we hear of some masters dining together. "A few half-hearted remarks are made about politics and books, a good deal of vigorous gossip is talked, but if a question as to the best time for net-practice, or the erection of a board for the purpose of teaching slip-catches is mentioned, a profound seriousness falls on the group."

It is not a reform of studies, as it seems to me, that is wanted, nor any reform of methods that could be imposed by any external authority. What we need is that we should ourselves become more alive to the true importance of things; that we should be less content to accept conventional standards; that we should think nobly of our own profession and its responsibilities. The longer I live the more deeply I feel, in this warfare of the studies that makes up so large a part of our talk about education, that the spirit in which we learn or teach is vastly more important than the subject-matter. I have strong prepossessions in favour of literature and history, but I would far rather see natural science or modern languages or mathematics taught in the right spirit than classics or history taught in the wrong.

Depressing as are the quotations which I have given from "The Upton Letters," the book on the whole leaves me with a feeling of hope. The inspiration of it may go far; and this article will not have been written in vain if it induces one or two schoolmasters to include the "Letters" in their holiday portmanteau. It is foreign to my purpose to speak of other pleasures the book holds in store for its readers—the charm of its descriptions of nature, the interest of its literary judgments, its frank revelation of character, its depth and delicacy of religious feeling.

Each day brings its petty dust
Our soon-choked souls to fill

is as true of the schoolmaster's life as of any other. And no success that is worth having will come to us unless we sweep away the dust as fast as it accumulates. One help to this is in those books which, as Canon Lyttelton complains, we too seldom read. Even the humble treatises on method have their use to this end. They keep a man from getting into those ruts of teaching which so quickly destroy his living interest and enthusiasm in his work. But there is a higher usefulness in volumes that show the ideals which may glorify the schoolmaster's craft—books still too few in number, but lately increased by the addition of Mr. Skrine's "Pastor Agnorum" and of "The Upton Letters." I can only quote here

one or two samples of the wisdom which those who go to this last book will find :—

It is better to encourage aptitudes than to try merely to correct deficiencies. One can't possibly extirpate weaknesses by trying to crush them. One must build up vitality and interest and capacity (p. 136).

I am sure that it is one's duty as a teacher to try and show boys that no opinions, no tastes, no emotions, are worth much unless they are one's own (p. 130).

There should be a treasure in the heart of a wise school-master ; not to be publicly displayed nor drearily recounted ; but at the right moment, and in the right way, he ought to be able to show a boy that there are sacred and beautiful things which rule, or ought to rule, the heart (p. 102).

What one ought to aim at is not the establishment of personal influence, not the perverted sense of power which the consciousness of a hold over other lives gives one, but to share such good things as one possesses, to assist rather than to sway (p. 321).

In such sayings the "old experience" of a public school-master seems to "attain to something like prophetic strain." He speaks of the things which he knows, and his words have, in a measure, that power which Matthew Arnold found in his father's speech and example. They—

Strengthen the wavering line,
'Stablish, continue our march,
On, to the bound of the waste,
On, to the City of God.

BALANCES AND WEIGHTS IN THE SCHOOL LABORATORY.

By REV. A. H. FISH, B.A., B.Sc.
Arnold House School, Chester.

THE revolution effected in the teaching of elementary chemistry and physics by the introduction of the cheap balance is undoubtedly one of the most striking features of educational progress during the last twenty years. The boy of 15 or 16 is now able to gain first-hand knowledge of fundamental facts, which previously the college student in his second or third year had to accept on the authority of teacher or text-book. Meaning and concreteness have been attached to symbols and calculations, which were heretofore the despair of minds not yet ripe for abstract reasoning.

The teacher has not been slow to appreciate the opportunities thus opened up, while instrument-makers, English and foreign, have under stress of competition put upon the market instruments which are marvels of cheapness and workmanship. Every elementary text-book of practical physics and chemistry contains a description of the school balance, and is in the main a course of quantitative work demanding its careful and accurate use. Rules for the manipulation of the instrument are given, and with these and a set of balances the teacher is supposed to be adequately equipped for his work.

A considerable acquaintance, however, with elementary text-books, and a more limited knowledge of the practice and method of science teachers, have suggested to the present writer a suspicion that in a good many cases the skill of the teacher is hardly adequate to that of the instrument-maker, and that he does not always use his balances to the best advantage. If called upon to justify this suspicion, he would point to the fact that, in the text-books in question, it is very rare to find an appreciation of the capabilities and defects of these instruments, or any indication that the writer is aware of the limits of accuracy to be assigned to them. The instructions for their use are almost invariably the stereotyped rules to be found in the text-books of quantitative analysis, and apply sometimes very incongruously to the balance described and figured in the text.

Now, even if it could be always assumed that the teacher has had a certain amount of experience in accurate quantitative work of a responsible kind, and with a good balance, his experience and methods would still need considerable modification, before they could be applied to these cheaper and less delicate instruments, and still more to the minds and fingers which are to use them. So that he might fairly look for some hints in this direction from colleagues of greater experience. It is, however, unfortunately true, so far as the writer's experience goes, that there is no subject (unless it be glass-blowing) in which the average college-trained teacher is so deficient, as in skill and readiness with the balance. His experience has been too much of the "ready-made" order. His balance has been adjusted for him, and his set of weights supplied, and he takes them as he takes his laboratory reagents, without suspicion and without enquiry. His quantitative work has been for the most part of a kind in which the results are known, or mistakes easily discoverable, and he knows as little of the uncertainties or certainties of the "fourth place," as he does of the purity or impurity of his reagents.

It is to this fact, which is being, it must be confessed, rapidly remedied, that one must trace the fact that in so many text-books the responsibility for accuracy is divided between the instrument-maker and the pupil, while the teacher stands by, as it were, and confines himself to general advice of an unimpeachable wisdom, but not always quite to the point. No attempt is made to indicate the limits of accuracy of the instrument or of the weights. The writer does not know of any elementary book in which it is recommended that these should be tested. Nor, as a rule, is any definite advice given as to how best to find the last decimal place, whatever it may be. The weights "are to be put on in order until the pointer swings equally on either side of the middle division of the scale." But, as most of us know, this is hardly to be expected even of the most well-conducted balance, and does not necessarily indicate exact quality of weight and load. True, the surprising delicacy of the instruments, the manipulative skill and care of many boys, and the doctrine of aver-

ages, generally suffice to produce respectable results up to a certain point. But the teacher who regularly records the weighings in his laboratory, and strives to introduce consistency and method into his work, will have to go behind all this, and may fairly look for help from others who have embarked on the same enterprise. The writer has had to teach himself in this matter before he could teach others. He has no title to speak *ex cathedra*, and he hopes that any advice offered will be taken in the spirit in which it is given, and will be freely criticised and added to by more experienced and more capable teachers. He ought to say that his experience has been chiefly gained in a laboratory where classes are never more than twenty, and generally less; where the ages vary from 12 to 18; where anything like elaborate apparatus or unnecessary expense has been severely discouraged. The point of view is that of training boys in habits of intelligence and accuracy, and not specially in methods of applied chemistry or physics. But whatever is done is to be done in the best way.

Obviously, the first question is that of the type or types of balance to be adopted. It became very clear to the writer many years ago, that the requirements of (a) beginners of from 12-14 years, (b) boys of 15-16 years who had done one or two years' work, (c) more advanced pupils of 17 or 18 years, could not with advantage be met by less than three main types of balance, with weights to correspond.

Taking the balances first, we have:—

A.—THE BEGINNER'S BALANCE.

Here we need an instrument which shall satisfy the following conditions:—

(i.) It must be more or less like the balance, which the young pupil has been accustomed to see and associate with the word, and the use of which he will understand without much instruction. "Why don't you go on with your weighing?" was a question once addressed to a juvenile experimenter seated in front of an elaborate instrument. "I'm afraid," was the reply; "I don't know whatever will happen when I turn this handle."

(ii.) It must not take up much room, nor require special care. It must be capable of being used on the working-bench, and of being easily taken down and put away in a box or cupboard.

(iii.) It should be capable of giving *consistent* results in simple experiments on density, solubility, and decomposition of simple salts.

(iv.) It should have considerable range and adaptability, and be capable of carrying tubes, flasks, evaporating dishes as well as watch-glasses and crucibles. It will be well if it can be used for the measurement of forces, for the verification of the principle of Archimedes, or the candle experiment of Faraday. It should give a reasonably good result for the weight of a litre of air, as well as the loss of weight which marble undergoes on heating.

(v.) It should be cheap, for there must be at least one to every pair of experimenters.

(vi.) And lastly, it should inspire in the juvenile mind neither awe, on the one hand, nor contempt on the other. It is to be for a year or two the familiar friend of a bold and energetic experimenter, who will not in the least mind, but will rather be stimulated by, a certain amount of trouble necessary for its successful manipulation.

Such a balance was found many years ago in what was then called Griffin's "Smaller Physical Balance." It consists of an ordinary pair of scales supported by a sliding-tube and thumb-screw on a brass pillar. It is supplied by most dealers for 12s. 6d. It can be used for weighing up to 100 grams or more, and will turn with less than 10 milligrams. It can now be obtained with scale and pointer, but the writer still prefers the form with the ordinary upright tongue, because there is no pretence about it: a pointer balance is of no use out of a case, and besides introduces the difficulty mentioned above. Its suspensions are of the ring and hook type, and their position being determined by gravity, it needs no levelling, and is always consistent in its results. It has been denounced in the writer's laboratory, even by an inspector, as a "jerry" affair, but as a matter of fact its consistency depends upon its "jerryiness," *i.e.*, its free suspension. The edges must always take the same, *viz.*, the lowest point. The one objection is the trouble involved in using it, but with a little practice this is easily overcome, and is more than compensated for by its great adaptability. For use with awkward pieces of apparatus, it is far more convenient than the lever type and is often preferred by boys who have access to balances of the latter type. It can be taken down and put away in its box in one minute. A dozen or so have been in use for over ten years. They have been carried from one laboratory to the other, used without special precautions in the ordinary air of the laboratory, and, with an occasional cleaning, are as good as they were at first. All first-year quantitative experiments can be performed with good results on this balance. Such determinations as the percentage of oxygen in KClO_3 , or of CO_2 in chalk, or of the ratio of O to magnesium, and many more, can be determined with an error of not more than 1 per cent. To use it, the pans are adjusted to equality, marked right and left; the support is raised so that the pans clear the base by about an inch. The left-hand pan is lightly supported by the fingers of the left-hand, while the weights are put on the right-hand one, when the experimenter standing a yard away judges of equilibrium by the oscillation of the tongue to one side or the other. It is surprising how small a want of symmetry is at once detected. Owing to the form of construction, there is little or no liability to parallax error, and no detailed instructions are necessary for its use. It is the favourite balance with most boys. They are allowed to use the weights to the last milligram, and generally insist on doing so before they are satisfied. Its determinations have been verified over and over

again by methods to be described below, and no suspicion of inconsistency has ever arisen. When the class meets, the teacher has only to say the word "Balances," and in a couple of minutes each pair of boys has his balance ready.

It will be well now to consider the question of weights, upon which so much of the accuracy and consistency attainable depends. It has been found best in our case for each boy, or for one boy of each pair, to possess his own weights. Not only are fewer weights lost, but much greater interest is taken in them. Now, a set of weights adjusted to reasonable accuracy for elementary work costs at least 9s. 6d. But for 4s. 6d. a set can be obtained from 50 grams to 1 milligram in a box. These are wonderfully well finished, but the larger weights are generally "out" by amounts which are sometimes as much as 20 milligrams, and as sold are therefore of little or no use. In the writer's laboratory these weights are corrected before being given out. The process is as follows:—A set of weights from 100 grams to 1 milligram which has been corrected against an Oertling set, verified either at the Reichanstalt or the National Physical Laboratory, is available for each class. These are taken as accurate to within 1 milligram. A good short-beam, quick-swinging balance is adjusted so that a vibration of 1 scale degree from the centre is equivalent to 1—2 milligrams. The weights of the box in question are tested against the standard from the 50 grams to 1 gram weight. They are generally too heavy. Any which are too light are set aside. The others are gently rubbed upon a piece of fine emery-cloth, wiped and tried one by one. After a little experience the adjustment can be made almost at the first trial. The balance is only allowed to swing about 1 scale division on each side of zero, and the weight is passed, when the deviation is less than half a division. This can be done very quickly, and gives an accuracy of within 1 milligram, or nearly so.

The weights which are too light are taken to the workshop. Each is clamped between wooden jaws, and a small hole drilled in the centre of the base. A fine steel punch, ground just to fit the hole, is used to drive in small pieces of lead cut to the size of the hole. Enough is put in to ensure an excess, but not to project. The weights are taken back to the laboratory and treated like the others. It is rarely necessary to correct the small weights, as these are stamped. Any which look suspicious are tried, but as a rule these are correct within the limits assigned.

After some practice a box of these weights can be corrected in this way in a quarter to half an hour, and the work may very well be done by an older pupil who is an accurate and careful weigher. The box is numbered, marked, and given to the expectant pupil, who as a rule will take the greatest care of it, generally carrying it home, and bringing it back to school on class days. The educational value to the pupil who watches the whole operation is not to be despised. The correction is sometimes made by sticking with a trace of

seccoline pieces of tin-foil on the bottoms of the lighter weights, but this does not look so nice, although it works well enough.

As a control, a number of pieces of glass, or better of quartz, the weight of each of which has been carefully determined, are kept each in its own numbered box, and these are occasionally given out to be weighed. The results are generally right within about 0.005 gram. If a greater error persistently occurs, enquiry is made into the weights used.

The writer is not unaware that agreement with a standard is not necessary for most results, if the weights are consistent among themselves. But (i.) it is more convenient to correct to a standard, and (ii.) in class teaching it is a great advantage to have the results consistent within known limits at any stage. When the pupil comes to weigh on a better balance, he either obtains a new and better set of weights, of which more anon, disposing of his old ones to his successor, or these are corrected afresh with more care.

It may be well now, before passing on to the next class of balance, to say a word or two about the general equipment so far as balances and weights are concerned. A standard set of weights should be available in every laboratory. These are not very expensive. A good set of Oertling's or Becker's weights, from 500 grams to 1 milligram, may be obtained for about £3. These can be standardised, and furnished with a table of corrections, if sent (the dealer will send them if asked) to the National Physical Laboratory, Bushy House, Teddington, Middlesex. The fee is 6d. for each weight tested, and will add about 15s. to the cost of the weights. A set from 500 grams down will suffice, but it is an advantage to have rather more than usual of the weights in duplicate—say two of 500, two of 100, and, at any rate, two of 10 grams.

These weights are kept under lock and key. They are never used except for the purpose of correcting and testing the class standards. These are of two degrees of accuracy—standard A and standard B. Standard B is an ordinary set costing about 12s., from 100 grams down, but with two weights of 100 grams. The weights in this set have all been adjusted to be correct to within 1 milligram. Standard A is a similar but better set. It is not adjusted, but furnished with a table of corrections. These in the set in question are within 0.3 milligram.

The correcting is done on a Bunge short-beam balance, the arms of which have been adjusted to very near equality and the zero point of which is very constant. If these conditions are not fairly satisfied, "double weighing" must be employed and the zero-point frequently determined. This balance is never used except by the teacher, and for purposes of verification and correction only. An excellent means of control is to have a few pieces of quartz (obtainable from any optician) weighed by one or two good assayists or chemists.

¹ For details see Kohlrausch, "Phys. Measurement;" Stewart and Gee, pt. 1; Schuster and Lees, "Practical Physics;" or Ostwald, "Physico-Chemical Measurements."

(No doubt the National Physical Laboratory people would do this for a small fee.) Occasional weighings of these will give an excellent idea of the accuracy that is being attained.

To take an example from the elementary class: a piece of quartz weighing 8.6768 grams was weighed on four of the beginner's balances with the corrected weights. The results were (the weight being unknown to the operators): 8.68, 8.677, 8.675, 8.677. *Mean* 8.677.

Weighings of this kind are very good for the pupil. The answer has to be got as exact as possible. He does not know what it will be, and it is surprising how reliant some small boys become upon their own powers with their balance and weights.

A description of the next class of balance, together with a discussion of the best methods of obtaining the last place, of the setting up and care of balances, of the work that can be done with them, of the large balance weighing up to 2 kilos., and of verification and correction of volumetric apparatus, will occupy another paper.

PRACTICAL MATHEMATICAL EXERCISES AND GRAPHS.

THEIR FUNCTIONS IN MATHEMATICAL TEACHING.

By A. CLEMENT JONES, M.A., Ph.D.

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AMONG the large number of text-books on elementary geometry published within the last few years, no two perhaps can be said to deal with practical exercises in the same way; the authors evidently hold opinions upon the relation of drawing to theoretical geometry which differ widely. One author gives an introductory chapter on practical drawing, evidently intending that young pupils should make their first acquaintance with the subject by a preliminary practical course of an experimental character; another provides a similar chapter, stating that it can with advantage be learned concurrently with the later parts of the book; another employs experimental drawing as a fundamental method leading up to the definitions and to properties which arrived at are enunciated without any formal proof whatever, and adopting the suggestion of the Committee of the Mathematical Association, problems are regarded as practical exercises and given without proof; another is content with adding practical exercises, usually metrical, to sets of examples in a treatise formerly purely theoretical. There is a general agreement in method in one particular only; the practical and theoretical portions of the subject are given separately, or at least so arranged that "experimental and graphical exercises are provided side by side with the usual deductive exercises."

When authors of text-books so differ in opinion one may expect *à fortiori* that their critics differ.

So much is this the case that concerning a well-known and widely adopted text-book two opinions were given me in one week by two men of about equal experience diametrically opposite. One, the senior mathematical master of a large public school, said: "A wonderfully good book, it adopts just the wise amount of the new ideas;" and the other, one of H.M. Inspectors, said, "the worst of the books published." In such circumstances it may be well to consider carefully what is the real function in geometrical teaching of practical and experimental exercises.

It is probably sound teaching to introduce geometry to beginners practically, but such introduction requires most careful treatment. It should consist for the most part of exercises making clear by illustration the fundamental ideas of the subject which are contained among the definitions in older works. To this end the use of solid models in the preparatory stages is, I think, wise; it gives the pupil clearer notions of lines and areas (*e.g.*, a line can be measured along the edge of a model instead of from a line drawn on paper), and if drawings are made of sections of simple models it helps to develop early the ability to think in the solid, which is a difficulty in later stages, which affects pupils of even exceptional mathematical ability. Again, drawing on squared paper such exercises as "a man walks five miles to the east, then turns to the north-east and walks ten miles; he continues his journey three miles to the west, how far is he from home?" gives a pupil an idea of direction and illustrates the real meaning of the term "angle." Further exercises should teach the beginner to use freely those mathematical instruments which he will require in the later stages, and for this purpose the drawing of triangles from various data is most useful. Such measurement and drawing can be utilised at the same time (i) to stimulate the pupil's powers of observation by comparing his ideas of magnitudes with actual measurements, (ii) to illustrate the lessons in arithmetic, (iii) to introduce elementary algebra as generalised arithmetic. Such a preliminary course differs in reality very little from the first course in mensuration and measurements which we formerly gave to beginners in physics.

Apart from such a preliminary course, the view we hold is that practical exercises should not be separated from theoretical, or even go side-by-side with them, but should form an intrinsic part of the whole, as do sets of examples in algebra or arithmetic. The exercises, whether simply drawing or drawing with measurement, should all be illustrations of the theoretical work. The invention of drawing exercises as such is of no mathematical value, nor is a theoretical question made practical and usefully so by appending the phrase, "verify by measurement." On the other hand, the invention of exercises illustrating the theoretical work of the lesson and testing the pupil's ability to apply a general result to a particular case is invaluable. Everyone will admit that, even if a pupil can write out correctly such propositions as "construct a square equal to a given rectilinear figure,"

or "the rectangles contained by the segments of two intersecting chords of a circle are equal," but who cannot at the same time answer practically such questions as "make a square equal to a rectangle whose sides are 3 and 5 inches, measure its side and compare with the calculated value," or "POQ and AOB are two chords of a circle, OP, OQ, OA are respectively 3, 4 and 6 inches, find the length of OB," such a pupil by no means understands the geometrical proposition in question. On the other hand, the pupil may do perfectly well such a question as "draw a triangle from the data, $b=3$ inches, $c=3.6$ inches, $A=62$, and measure a , B, C," but he does not prove that he understands any geometrical property; he shows certain mechanical skill, but is probably at as much loss as the present writer to understand why he is asked to measure a , B and C. It has been urged that such measurements give the teacher a simple method of estimating the accuracy of a pupil's drawing; measurements with more obvious purpose in them would, from this point of view, serve equally well. It cannot be too often insisted upon that all drawings or measurements should illustrate definite points and lead to definite results; exercises which merely test a pupil's skill in draughtsman's work are surely for the art room. Used as illustrations, drawing exercises, without doubt, make much of the theoretical work clear in a way no amount of explanation could do; the form and language of Euclid gave the work a peculiar atmosphere, and doubtless the majority of pupils failed formerly to recognise the application of the propositions even in quite simple cases, *e.g.*, I have often found that a new pupil had only the vaguest idea of the meaning of the phrase "the rectangle contained by AB and CD." Once the pupil has drawn a rectangle contained by say 2 and 3 inches, a new light is at once put on a series of propositions which must have previously appeared to him nonsense. An examination of the exercises set in most of the new text-books does not lead one to think that they have been chosen with these ideas in view; in fact, the majority seem to have been hurriedly turned out for the sake of inserting something which could be called *practical*. The intention is thus quite defeated, for, from the point of view of geometrical teaching, they could scarcely be less practical. I select a few examples chosen at random for criticism:—

Draw a square having one side equal to 3 inches. Measure all its sides, angles, and its diagonal.

A slight experience will verify that even small boys will not make measurements the results of which are quite obvious merely for the sake of suggested experiment. In the construction of the square the sides must be drawn equal and the angles must be constructed as right angles. Again, what is gained by measuring one diagonal; it leads to nothing; were it intended to verify a calculation, and hence to illustrate the difference in importance of decimal places, it would be intelligible.

Construct a triangle given $a=3$, $b=4$, $C=30^\circ$, draw a perpendicular from A to the base and measure its length.

In a semi-circle of radius 5 cms. inscribe a circle of radius 2 cms. Measure the parts into which the diameter is divided at the point of contact.

Construct a rhombus of which one angle is 50° , and the length of the diagonal through it is 2 inches. Measure a side.

In all these exercises a single measurement is asked for, but, so far as the books indicate, these measurements are not intended to lead to anything further. To measure the perpendicular of a triangle as a preliminary to calculating its area is probably instructive; as an isolated measurement it is geometrically worthless. In the second of these questions, again, the results 4.73 and 0.27 do not indicate when found any geometrical property; to the pupil they are surely mere numbers, connoting nothing. The pupil can but feel that he has been beguiled into making a measurement which he probably cannot verify, and from the results of which he can make no deduction whatever. The measurement asked for in the third question is similar; there is no relation between the measured length and the given data which can be found by elementary geometry.

On the other hand, measurements which lead to the discovery of less obvious properties, which, when discovered, are to be proved, or which are to be dealt with immediately or in the next lesson, may have considerable value. To practise accuracy of measurement, if desirable, there are any number of interesting questions which could be substituted; lengths and angles the pupil can see some object in discovering which cannot be found by the methods of elementary geometry should be set in preference; for example, the triangle whose construction is asked for might form part of a question in heights and distances, and the solution of such questions by drawing gives the pupil useful practice in producing plans of parts of a figure which are in different planes and constantly illustrate the full definition of an angle.

The view that all drawing exercises should be illustrative includes also that in no case should they be regarded as demonstrations of a strictly logical character. I refer to such statements as "draw two triangles with sides 2, 3 and 4 inches; cut them out and place one on the other; from this experiment we see, etc.;" or as the following note appended to Euclid I. 4, "Beginners should with a pair of scissors cut out triangles from a *double* sheet of paper and prove this proposition experimentally." Similar proofs (!) occur in propositions on circles. It is highly questionable whether even with beginners it is wise to draw any general deductions from experimental drawing; it gives a false impression of the real nature of a proof at the start; in most cases such attempts at proof consist really in basing a general theorem on a particular case, which is fundamentally wrong; moreover, geometry is not an experimental science, whereas practically the same exercises could be usefully set as particular cases of a general theorem, a logically sound method of proceeding. Messrs. Hall and Stevens, in the preface to their "School Geometry," indi-

cate a similar view. Thus, in reference to the working of exercises they say, "time . . . should be used in getting the pupil to *apply* his knowledge," and the large proportion of exercises in this book fulfil the condition that they should be illustrations, testing the pupil's ability to apply to particular cases the propositions learned.

Besides the many books above referred to which include practical work there are a number devoted entirely to it, usually intended as a preliminary course. The general impression which the reading of these books has left upon me is that in them geometry is approached diffidently; modern reformers have demanded practical work and too often added a sneer at the purely theoretical; hence practical treatises are given us, pure geometry is dished up in "tit-bits," and, after the manner of modern journalism, care is taken that nothing shall be dealt with fully, nothing thrashed out, all difficulties are eliminated, anything approaching a system of geometry is disguised, lest some modern critic, to our confusion and shame, accuse us of teaching Euclid. This attitude is, to my mind, very wrong. In so far as practical drawing and measurement tends to make geometry clearer, its application more definite, its introduction and reception more interesting, they are sound; in so far as they replace geometrical teaching by superficial, easily acquired knowledge, they are unsound. There is no royal road to learning.

The question has been put to me, how much drawing should be done in the various stages of mathematical teaching? In my opinion, this should be proportional to the amount of theoretical work which the teacher finds he can get through. Premising that the pupils have been through some such preliminary course as I have indicated above, I think in the first year pupils should be taught thoroughly a fair number of propositions, so thoroughly that they will have nothing to unlearn in later stages, and the practical exercises should arise out of the theoretical work. This should include all the easy constructions, whether proofs are taught or not. The exercises should be sufficiently numerous to make sure that the pupil can apply his knowledge to any particular case asked for; it is from this point of view that metrical exercises are preferable to the older form, such as "draw a triangle given the three sides." The exercises should include the calculation of simple areas, drawing to scale to illustrate proportion and plotting loci.

The question arises at this point whether it is advisable for the drawing exercises to lead up to future work, or whether they should be confined to illustrations and applications of the work the pupil is learning at the time. Personally I think that at this stage it is of the highest importance that the pupils should obtain a clear understanding of the fundamental propositions, and consequently a large number of illustrative exercises are required. These, as a rule, will, I think, suffice, in the case of a specially good division which, as is occasionally the case, advances much more rapidly than the average; there is no harm in teaching them such

exercises as drawing tangents to circles, in- and circum-scribed circles and the like, but such preparation for the following years should not be a fundamental principle of teaching. It may be urged possibly that this view does not coincide with the remarks above on a preliminary course, but on consideration I think it will be seen that, though in a preliminary course the exercises must be, to some extent, anticipatory, in order that the pupils may obtain notions of geometrical figures, yet even such exercises are illustrative of the point which the master is teaching his class. The points I would urge at this stage are, then, that no general deductions should be made from particular drawing exercises and that the exercises should be confined to the illustration of the lesson, or in leading up to an immediate lesson.

In the second year the same principle should decide the amount of practical work; there should consequently be more scope for such exercises. To test a pupil's knowledge of propositions takes, of course, considerable time; but beyond this, to quote again from Messrs. Hall and Stevens, "the working of examples should be made as important a part of the lesson in geometry as it is considered in algebra and arithmetic." To this end the examples must be of an easy character; exercises in drawing and measurement, provided they lead to definite results well within the knowledge and understanding of the pupils, will therefore be very helpful, it being always difficult to provide sufficient riders of an easy nature.

In the third year I think the drawing exercises should decrease; they should have served their purpose, and pupils should then have clear ideas of geometrical quantities; the necessity for accurate drawing is less, and the pupils need fewer exercises to learn to apply propositions in numerical or special cases; they should also devote more time to riders. So far as my experience goes, I think there is no doubt that the boys in the third year enjoy the practical work, provided the exercises are intelligently chosen, but it is easy to mistake a desire to do the easier work for an enthusiasm for one phase of geometry.

After the third year I feel strongly that the drawing should be dropped altogether; pupils who still remain are not prepared to arrive at results by drawing and measurement which they can more easily prove or calculate. They also have less time to devote to elementary geometry. The Oxford and Cambridge Joint Board has, I think, made a serious mistake in insisting on practical work for candidates in the higher certificate for additional mathematics. Strange to say, they supply an alternative schedule of purely theoretical work for pass candidates; it would surely be wiser to reverse this.

To pass on shortly to the question of graphs—shortly, because much that I had already written has been forestalled in an excellent letter from Mr. Hall in the April number of this periodical, a letter with which I thoroughly agree.

The rational use of graphs in mathematical teaching is doubtless most beneficial, but the word

"rational" requires considerable emphasis. Graphs seemed to have been impressed on the subject much as a new fashion of dress is forced upon society. Inspectors found graphical teaching a useful point to inquire for and the results easy to examine, and the tendency has been to judge a teacher's work by this one phase; consequently masters have been inclined to employ graphs to a considerable excess. Initially the drawing of graphs can with small boys be used to replace much of the usual dull and useless work in substitution. Otherwise they should be employed only as illustrations, and every graph set or worked out on the board should arise naturally out of the arithmetic, algebra or geometry lesson, illustrating a definite idea, in much the same way as a good teacher of geography employs maps and diagrams. First, there is the important idea of continuity; in this respect it has been urged that the graphs of statistics which give curves of no particular shape impresses the idea of continuity by contrast. I have found that such graphs tend to make pupils content with joining a few points by straight lines in all cases. For the most part, graphs of this kind are of little or no mathematical value and often are positively harmful. I have before me a specimen page of a new book on graphs, in which the following example is worked out as a specimen:

In a price list the following prices occur:—

	s.	d.
Three-pint kettle	2	7
Four-pint kettle	2	11
Six-pint kettle	3	3
Eight-pint kettle	4	3

Estimate the probable cost of a kettle holding (i) five pints, (ii) nine pints. What size kettle would be presumably obtainable for 5s.?

The words "probable" and "presumably" do not save the example from being ridiculous. A nine-pint kettle is found to cost 4s. 10½d.—the half-penny is noteworthy; and a 5s. kettle holds nine and a quarter pints. Now, suppose in setting the question the prices of a three, four, five and six pint kettle were given and the price of the eight-pint kettle required, the answer by the same method would be 3s. 6d., an error of only 9d.

Exercises in graphs, then, should be confined for the most part to quantities which are connected by some algebraical or geometrical relation. Some other ideas—they are limited in number—which can be usefully illustrated by graphs may be mentioned; maxima and minima, the beginnings of logarithms, especially the theory of proportional parts, limits, the number and nature of the roots of equations, &c. On the other hand, to teach graphs as a clumsy and unsatisfactory method of solving equations is useless, and I feel most of the time so spent is wasted.

Much of the value of graphical teaching has been lost owing to the somewhat ridiculous way in which graphs have been introduced into textbooks. They are illustrations, and should have been introduced as such; writers have, however, been content with appending a chapter or even with writing a special book on graphs. This

seems to me as strange as if it had occurred to the writer of a book on any subject that illustrations would improve the book, and in a later edition appended a chapter of illustrations, in many cases giving no references, and in more, appearing to have introduced the pictures for their own sake rather than as illustrating anything. I think the wise teacher will avoid such chapters on graphs, and as aforetime allow his questions to be suggested by the lesson from day to day. Too much care cannot be taken in choosing an illustration; the difficulty of selecting suitable units needs attention, and the value of an illustration is often lost if too numerous details in the drawing have to be explained.

A noticeable omission in books on graphs is the application to geometry. Geometrical graphs are often very instructive, and further, many geometrical exercises can well be set in graphical language, the relative position of lines and points, &c., in a particular problem being thus shortly and easily expressed.

Finally, one important feature of graphical teaching is that it enables the master to correlate the various branches of mathematics in a striking and interesting way. The modern teacher no longer deals with arithmetic, algebra and geometry as isolated subjects, but tries to make the work interesting by giving boys exercises which make the relations between the subjects clear. This effort is advantageous also to the teacher, for its support provides him with a field for elementary research. Perhaps it may be of interest if one or two sets of examples, from the many which I have found arouse the attention and interest of boys, are appended without further comment.

(1) (i) Solve $x^2 + y^2 = 25$, $x + y = 7$.

(ii) Draw a right-angled triangle whose hypotenuse is 5 and the sum of whose sides is 17.

(iii) Draw the graphs of the equations in (i), find where they meet and deduce a simple geometrical construction for (ii).

(2) (i) Calculate $\sqrt{2.45 \times 3.4}$ to two places of decimals.

(ii) Construct a rectangle whose sides are 2.45 and 3.4, make a square equal to it, measure and calculate its side.

(3) (i) Find the maximum value of $2x - x^2$.

(ii) Draw the graph of the function $2x - x^2$, when is it a maximum?

(iii) The sum of the sides of a rectangle is 2 ins., when is its area greatest?

(4) Construct five triangles on bases 1, 2, 3, 4 and 5 ins., whose base angles are 45° and 60° . Measure their areas and draw a graph illustrating the relation between the area and length of base of these similarly shaped triangles. Compare with the graph $y = x^2$.

Medieval and Modern History. By P. V. N. Myers. xvi. + 751 pp. (Ginn.) 7s. 6d.—This is a "somewhat abridged" edition of the two volumes, respectively known as "The Middle Ages" and "The Modern Age," which we have previously recommended in THE SCHOOL WORLD. This edition is in one volume, with new illustrations and maps. It is a very good piece of work, one of the best general short histories of Europe now available.

THE USE AND CARE OF THE VOICE.

By FANNY HEYWOOD.

THERE should be no need to urge the necessity for vocal culture to those who depend on the use of the voice for their professional work, but the serious throat affections of which numberless teachers complain is evidence that, from want of culture, there are many who painfully realise the wide difference between the ordinary use of the voice and its use in teaching several hours daily in the class-room. To qualify for a teaching career and yet give no thought to the cultivation of that voice which must impart the knowledge acquired to others is surely inconsistent.

Vocal training should be included in physical training. The muscles of the voice are only properly developed, as are the muscles of the body, by methodical and regular exercise; there are vocal gymnastics, exercises which give strength and elasticity to the muscles of articulation.

The writer holds that a teacher of vocal culture should guide to the desirable end in view without enforcing the study of physical mechanism, Nature having provided that all the different adjustments of the larynx and articulating organs respond at once to every variation of action required of them. To ask students to bear in mind each position of the tongue or shape of the mouth when different vowel-sounds are pronounced is to hamper them unnecessarily, and may be to create difficulties where none exist.

Given a vocal apparatus in a healthy condition, and no impediment of speech for which special training is required, students should at once apply themselves (properly directed) to the *art* of voice production, trusting to the physical parts to obey natural laws.

(a) A wrong method of breathing; (b) pitching the voice too high; (c) loud talking, and (d) want of variety of inflection, are the primary causes of many of the throat affections from which teachers suffer.

Happily, breathing exercises are now given by all trained teachers of physical culture, and the great importance of diaphragmatic breathing is taught and more generally understood. No one can sing or speak well without skilful management of the respiratory organs. The quantity of air inspired for vocal uses must be greater than that inhaled for the ordinary purposes of life, and the advantage of learning the right method of taking in breath into the lungs thoroughly, quietly, almost imperceptibly, and of properly controlling it in the act of expiration, cannot be exaggerated.

All speakers must first learn how to pitch their voices before they can hope to manage them. Under the impression that they will not be heard in their customary pitch of voice, untrained speakers often make the mistake of changing it to a higher one, and, as a consequence, the vocal

organs, unused to this unnatural pitch, soon become fatigued. It is the middle pitch, used (as a rule) for conversation, that should be employed; not only because from that pitch it is more easy to rise to a higher or descend to a lower one, but because the middle of the speaking voice is generally stronger from being most frequently exercised.

The volume of sound necessary to fill a large room is much smaller than is generally imagined. The speaker should never shout, however large the room; a speaker with even a naturally weak voice, if he only possesses by nature, or by cultivation, a sharp, clearly defined articulation, has infinite advantages over the owner of the loudest voice lacking this qualification.

The voice naturally glides into a higher tone when we want to speak louder, so those who begin with high pitched voices (in their mistaken efforts to be heard) are apt to rise higher and higher, and end by shouting on one note, thus losing all the benefits which come with variety of pitch. All speakers should begin *under their usual pitch of voice rather than above it*.

It is variety of inflection which brings rest to the voice, as does change of muscular action to the body, and it is variety of inflection which not only rests the voice, but pleases the ear.

The English clip the vowel sounds, and seldom open the mouth wide enough to allow its cavity to act as a sounding board to the voice. *Vowels are tone carriers*. If the vowels are *formed purely*, and properly dwelt upon, there is material for due inflection, they contribute to the musical quality of the voice. The practice of vowel sounds is just as important for the speaker as for the singer; as vowels help to develop the singer's voice, so must we rely on vowel sounds for the development of that of the speaker. The benefit that must come from singing vowels on sustained notes will soon be apparent to all who will give twenty minutes each day to the practice of the exercises here given. Singing long notes teaches the speaker how to hold the breath so that the proper expiration may be mastered as well as inspiration. There are, of course, a few who are not endowed with a musical ear, but out of a hundred persons not more than one will be found to be absolutely without an ear for music.

The attitude of the student whilst practising should be as easy and natural as possible.

Standing firmly (with the weight of a well-balanced body on the left foot, the right slightly in advance), let the head be erect—the shoulders thrown back, but *without effort*—the chest free, not forced out. *The shoulders must never be raised during the act of inhalation* and the breath must be taken *silently*. We should never be painfully conscious of the act of breath-taking. If inspiration be too prolonged, the act of expiration will be shortened. Both inspiration and expiration should be effortless. For breathing exercises, the breath should be taken through the nose with the mouth closed, but for singing or speaking the mouth should be *slightly* open. The habit of breathing through the nose with the mouth slightly open can be acquired.

Long vowel-sounds to be sung:—

- "oo" as in soon. "aa" as in far.
- "o" as in go. "a" as in nay.
- "ee" as in see.

The mouth must be well opened in singing *ee*, or the tone will be nasal. The space between the upper and lower teeth should admit the breadth of the thumb. In order to develop the voice, all exercises must be sung with full voice, but *without forcing it*. No tight garment should be worn during practice.

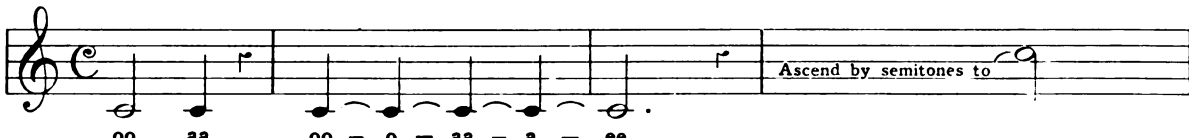
Breathe deeply through the nose with the mouth slightly open, slowly and silently (without raising the shoulders). Pause an *instant*, and sing the note

at a distance with the back towards the reader. Each movement of the lips should be exaggerated.

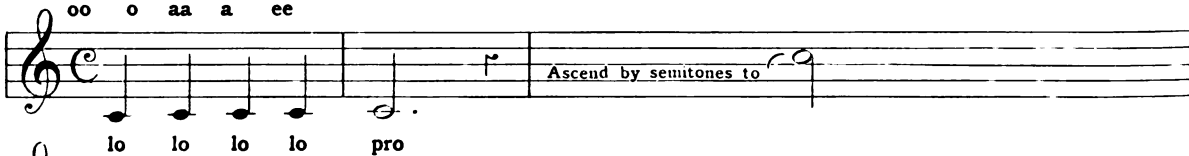
Example for Exercise.—"Quintilian says: The art of varying—the tones of the voice not only affords—pleasure and relief—to the hearer—but by the alternation—of exercise—relieves the speaker—as changes of posture—and motion—of standing—walking—sitting—lying—are grateful.—We cannot—for a long time—submit—to any of them."


Syllabic Reading.—This practice cannot be over-estimated. Take prose or poetry and read aloud, *dividing the words as pronounced.*

"Dif-fi-cul-ties—of—ar-ti-cu-la-tion—are—not—

No. 1. 

No. 2. 

No. 3. 

No. 4. 

In these Exercises sing notes within the compass of the voice.

gently without slurring. Let the vowels be pure and the consonants firm and clear. Take breath at each rest.

Those who do not sing may recite these exercises in monotone.

The practice of reading aloud daily with right method strengthens the voice. There must be proper management of the breath, variety of inflection, clear articulation and avoidance of a loud, high pitch. The head should be kept erect, bending over the book impedes the action of the vocal organ, and the voice falls on the pages read instead of reaching the listener, who should be able to see the face of the reader.

The *loud whisper* is an exercise for distinct articulation. Read in a clearly articulated whisper so that every word can be heard by a person seated

on-ly—o-ver-come—but-dis-cov-ered—by—the-prac-tice—of—syl-lab-ic—read-ing."

EXERCISE ON CHANGING THE KEY NOTE.

- | | | |
|--------|---------|-------|
| Scar. | Moon. | |
| Bar. | Noon. | |
| Fall. | Roan. | |
| Tall. | Cone. | |
| Dame. | Spoil. | |
| Name. | Coil. | |
| Abode. | Ado. | Agó. |
| Bill. | Beach. | Bit. |
| Quail. | Quench. | Quit. |
| Red. | Reach. | Rip. |

Words from the above list may be spoken with full voice, *not forced* first on a low note, then on a high one, now on a middle note, changing to a high and afterwards to a low note. The breath first being prepared, the mouth well opened for the open

vowel-sounds and the jaw dropped with precision. The vowels must be elongated, the consonants sharply struck and the power of the final ones exaggerated. Stand in correct attitude.

The English are not only guilty of clipping the vowel sounds, but of slurring their final consonants; the usual defects of utterance may be attributed to this neglect. Difficult sentences selected for practice will illustrate that indistinctness of speech is often caused by inertness; there are people who scarcely move their lower jaw when speaking. The bad habit of slovenly pronunciation can easily be remedied by practice of suitable exercises; success, however, depends on the student's own exertion and concentration of mind on the desired attainment.

"Happy are they that hear their detractions, and put them to mending." Rules designed to correct bad habits of speech, and make the voice a fit instrument for the mind full of knowledge, should be carefully observed.

THE NEW TRAINING COLLEGE REGULATIONS.¹

THE publication in the middle of June of the new Regulations for the training of teachers under the Board of Education can only be described as belated, seeing that they become operative on the expiration of July. Although the alterations from last year's copy are neither considerable in number nor fundamental in character, a notice longer than six weeks (some of which fall within the Long Vacation) may be reasonably expected by those who are to carry the new directions into effect. The present edition makes several pointed allusions to the year 1907 as to a time of more radical change; it is to be hoped that ample notice will be given of such change to all concerned, amongst whom the students, or would-be students, are of course numbered, though the fact is not always remembered.

The educational administrator will probably regard as of chief interest in the new Regulations the institution of building grants and the lowering (as it would seem) of the qualification for holding a King's Scholarship. The Board is now prepared to pay to local authorities, or other authorised bodies, one-fourth of the cost of building a new training college up to a maximum of £100 per "place" (*i.e.*, the accommodation for one student) or the same fraction of the cost of hiring temporary premises up to £4 per place, if the £75 (or less) or the £3 (or less) respectively are found by the local people. Eligibility for holding a King's Scholarship, when based upon success in the King's Scholarship examination itself, has hitherto been restricted to those who passed that examination in the first or second class; the limitation now disappears, and all whose names are on the

list, whether in the first, second or third class, are qualified for admission to a training college.

The doctrine used to be that a place in the third class denoted inability to profit by residence in a training college; the new teaching is that "not a few of such candidates are in every way likely to make good teachers, and would derive great benefit from a training college course." Doubtless, many of those who fall into the third class are endowed with the gifts of character which go far towards making the educator; but the lamentable want of knowledge connoted (at the age of eighteen or more) by that third class, supposing the class to be merited, ought to be a bar to employment as a public instructor. It is disquieting at this time of day to read the suggestion that ignorance is not a capital defect in a primary school teacher.

The proposed building grants constitute one more welcome acknowledgment that the training of teachers is not a purely local duty; the assistance thus offered towards the greater provision of training college accommodation, and the lowering of the standard of admission to the colleges, would appear to be tokens of the Board's conviction that more persons than hitherto should be trained for the profession of elementary school teaching. Independent enquiry, however, goes to show that the existing number of places in the training colleges roughly approximates to the actual number of requests for admission. We must distinguish between the "demand" as it is and as it ought to be. Unhappily, the former seems to be fairly met; the latter is very far from being met. So long as training is considered dispensable and the short-sighted are encouraged to regard the two or three years spent in training as chiefly time lost from wage-earning, so long will the effective demand fall below what it ought to be. In this connection it may be pointed out that the new Regulations forbid the student in training to prepare himself for external examinations, while the acting teacher is, of course, free to follow the chase of certificates in music, drill, and other accomplishments favoured by school managers. Thus the regulations lend one more argument to the short-sighted who "sees no good" in training.

Turning to the work of the colleges themselves as laid down in the Regulations, the intention to restrict university studies to a smaller number of students is even more evident than it was in last year's version, when it first appeared. In future, no King's Scholar may prepare for a matriculation examination during residence. To be eligible for a full three years course ending in a degree, the King's Scholar must (i.) be qualified by the university rules to enter upon that course without further examination, and (ii.) be a member of a college organically related to a university. A college which prepares students for a purely external examination will not be considered as fulfilling the latter condition. The progress of the "three-year student" towards a degree will be carefully scrutinised by the Board; failure to satisfy the medical officer, or to pass an inter-

¹ "Regulations for the Training of Teachers and for the Examination of Students in Training Colleges." Cd. 2558. 1905. xxii.+65 pp. (Wyman.) 4jd.

mediate stage at the time contemplated by the ordinary arrangement of the university curriculum, will in the majority of cases reduce the student's course from three to two years and so terminate his university career. From 1907 onwards, the conditions of admission to degree courses will be made even more stringent.

It was pointed out in these columns a year ago that, by forbidding a King's Scholar to commence the study of Latin and Greek in his training college, the Board was adding a further inducement, where none was needed, to those which divert so many King's Scholars from a course in arts to the much less appropriate (from the elementary school point of view) course in science. The Board has now afforded a substantial measure of relief by removing Greek from this proscription; Latin, wisely, no doubt, remains. But, in the interest of very many schools, both secondary and primary, it is highly desirable that the new universities should see their way to frame *arts* courses in which modern studies will be accorded the recognition which they deserve.

The Board is evidently dissatisfied with the results of sending King's Scholars abroad during a third year of training, since it has decided to terminate the existing practice in 1907. On the other hand, third year courses of an entirely new kind are contemplated, which promise to be fruitful in good to teacher and school. The manner of selection is somewhat obscure, but it is proposed to select from amongst teachers who have left the training college not more than four years men and women who will either return to the college for "a renewed study of the principles of teaching" during one year, or, for the same period, go abroad to get into "direct contact with foreign elementary schools." The Board contends that, for either purpose, the experience of three or four years' work in the schoolroom, subsequent to the two years' training college course, will give the third year student an advantage of great weight. The contention is a sound one, and the principle involved might well be extended in its application; some foreign administrations, as, for example, the French, require evidence of more advanced pedagogical study from all teachers in elementary schools, at some point during the early years of active professional duty. In any case, a judicious selection of third-year students of the class defined promises to prove of great benefit to the public service.

We took occasion a year ago to call attention to the very unsatisfactory position of the practising schools created by the recent Education Acts. The schools, as the Regulations themselves imply, should form an integral part of the training college organisation; many of them were built and for many years were largely maintained at the expense of the authorities of the particular colleges which they serve. There can be but very little reality in the study of "method" in the college lecture-room apart from its exemplification in the practising school. Hence the staff, equipment and organisation generally of such a school may be expected to

differ from those of a school not so used. But the practising schools which participate in Treasury grants have passed automatically under the control of local authorities, and those bodies have not always appreciated the particular function of the practising school. Some authorities forbid a training college to offer higher remuneration to the school staff for the purpose of securing specially qualified men: others refuse to provide the extra equipment, because it is extra, even though indispensable; others, again, insist on the observance of the *minutiae* of management laid down in the first instance for schools of a less specific character. The reasons for so acting are many: ignorance of what training means and an unfounded fear lest a sort of moral vivisection will be inflicted on the scholars play their part with motives not so respectable. But while matters stand so, and the Board of Education refuses to stir a finger to secure adequate recognition of the proper functions of practising schools, it is in the highest degree irritating to read in the Prefatory Memorandum, "The importance of correlating the theoretical instruction in teaching, the practising school work, and the visits to model schools, should always be borne in mind."

This is a practical point of capital importance to which the Board might profitably address itself before the next set of Regulations appears. It might also make up its mind as to the extent of the obligation to the State which is contracted by the King's Scholar. At present (and the practice dates almost from the beginning) the King's Scholar, on admission to the training college, declares that it is *bona fide* his intention to follow the profession of teacher in elementary schools, or in institutions allied to the elementary school system, and that he takes advantage of public funds in order to give that intention effect. What period of service may be considered to be a just repayment of the, after all, not very considerable sum of money expended on such a teacher's training, bearing in mind the fact that, though he obtains a salary directly his training terminates, it is but a very modest one? It can scarcely be pretended that the lien upon his services is for life, though, in very many instances, it is so in practice. Elsewhere, the obligation to the State is limited to a defined period of years, after which the teacher is free, morally as well as legally, to seek employment where and how he can. The question will become acute in the near future, and in justice to all ranks of teachers, the Board of Education should take its courage in its hands, delete the feeble footnote repeated from last year's Regulations—"It is probable that changes will be made in the terms of this declaration"—and tell the King's Scholar and the world at large how many years of service he owes the elementary school system.

MR. A. C. BRNSEN, late an assistant-master at Eton College, has been appointed a member of the Consultative Committee *vice* the Rev. Canon Lyttelton, who has resigned his membership upon his appointment as headmaster of Eton.

INTERMEDIATE EDUCATION IN IRELAND.

A YEAR ago Mr. F. H. Dale and Mr. T. A. Stephens, Inspectors of Schools, of the Board of Education in England, were appointed by the Lord-Lieutenant to report on certain phases and possibilities of intermediate education in Ireland, Mr. Dale having already the year before presented a report on Irish primary education. They visited nearly eighty intermediate schools of different kinds, *i.e.*, rather more than one-fourth of the total number. They investigated in detail questions of administration and organisation, involving a consideration mainly of the preliminary conditions affecting the success of the system as a whole. If it be asked why such an inquiry was necessary after the Commission held so recently as 1899, the contrast between the two reports is a sufficient reply. This is the work of educational experts, the other rather of amateurs, whose proposals, however well meant, have hitherto failed to put schools on any sure path of progress. The present report comes like a breath of fresh air over a stagnant pool. It is divided under four heads, the neglect of some of which by the other and by the subsequent Act of Parliament of 1900 was bound to render its work abortive and disappointing. The remarks on each of these four points are here briefly summarised.

I.—THE CO-ORDINATION OF INTERMEDIATE EDUCATION WITH PRIMARY, TECHNICAL AND UNIVERSITY EDUCATION.

There is at present no relation for purposes of administration between the Boards of National and Intermediate Education. On the other hand, the national schools are far more than in England the recruiting ground of intermediate schools, the percentage of boys in intermediate schools who have previously been in national schools varying from ten to fifty. This is due to the absence of preparatory schools and to the keener desire of the lower middle classes for superior education. The proportion of the population attending secondary schools in Ireland is at least 6 per 1,000, while in England it is only 5 per 1,000; yet there is no co-ordination of curricula between the two classes of schools, and boys stay, as a rule, too long, often up to the age of fourteen or fifteen, in the primary before proceeding to the intermediate school. The Christian Brothers have, to some extent, solved the difficulty for Roman Catholic boys in the larger towns, but otherwise there are practically no facilities in the way of scholarships for passing from one grade of education to the other. Again, dividing intermediate schools into two classes, those whose pupils propose to proceed to a university and those whose pupils leave, say, between fifteen and seventeen for professions or business, the supply of the former is adequate, but there is genuine need, especially in Ulster, of schools of the latter type. It is suggested that the "model schools" might be made

available to meet the deficiency. Scholarships might be provided from the money now spent in exhibitions and prizes—£4,050 in 1903—in the junior and preparatory grades. They should be of two classes, the first consisting of thirty of £20 each for three years and fifty of £5 each for the same period for pupils from primary schools between the ages of twelve and fourteen, and the second consisting of fifty scholarships of £10 each for three years for pupils of the same age already in intermediate schools.

Full justice is done to the co-operation between the Intermediate Board and the Department of Technical Instruction in the teaching of science and drawing, but the difficulties militating against complete success are pointed out as "inherent in a system under which an intermediate school has to deal with two authorities, one of which has power to deal only with a particular aspect of its work." The methods and principles of the two in making grants are entirely inconsistent, and allow a school, refused grants by the Department on the ground of the unsuitability of its premises, to continue to earn grants from the Intermediate Board. Educationally, too, the system is unsound. Science and art subjects have a double endowment and the science course is far easier than the classical course, hence there is serious danger of the neglect of the literary side of education. The simplest method of meeting these difficulties would be to transfer the administration of the science and art funds to a central office, which should deal with the schools in all points, and to abandon the practice of making a separate grant for these subjects.

Finally, the Board of Intermediate Education does not stand in any organic connexion with the universities. This occasions several anomalies. For example, while the universities offer scholarships and sizarships for special subjects, the Intermediate Board discourages specialisation. The central office which is proposed should therefore arrange for a small committee containing representatives from universities and colleges of university rank, and from intermediate schools.

II.—THE STAFFING, EQUIPMENT, SANITARY CONDITION, &c., OF SCHOOLS RECEIVING GRANTS FROM THE INTERMEDIATE BOARD.

The defects in premises are principally in the smaller Protestant schools. In some several classes under different teachers are taught together in one room. At least forty schools are unfit for use as such, and in the larger towns there is an over-multiplication of small private schools. The staffing is adequate in numbers, which are as follow:—

Roman Catholic Schools:—

Boys, teachers in orders, 428; lay teachers, 298; graduates, 68
—or 11.5 per cent.

Girls, teachers in orders, 344; lay teachers, 84; graduates, 31
—or 8 per cent.

Protestant Schools:—

Boys, teachers in orders, 18; lay teachers, 381; graduates, 223
—or 55.8 per cent.

Girls, lay teachers, 425; graduates, 131—*or* 30 per cent.

Thus, there is one teacher for every eleven boys and one for every nine girls, but there are too many inexperienced ones. There are eighty-two undergraduates in Roman Catholic boys' schools, seventy-four in Protestant boys' schools and sixty-seven in Protestant girls' schools, and numbers of these have no intention of adopting the profession permanently. The average salaries in 1903 of assistants were: in seventy intermediate boys' schools £82 6s. 7d., and in forty-seven girls' schools £48 2s. 7d.! "There is a real danger that the public may lose sight of the condition without which machinery is comparatively valueless, namely, the provision of a body of competent and well-qualified teachers."

III.—ALLOCATION OF THE FUNDS OF THE INTERMEDIATE BOARD.

In 1903 £11,356 were given in exhibitions and prizes, and £57,318 were paid to managers as results fees. The whole system of results fees as paid on individual students is emphatically condemned. It does not test the work of a school as a whole, but only of a small proportion of the scholars. There are some subjects and important things in education which cannot be adequately tested by examinations. The recent reforms of the Board have not proved effective, and inspection by itself will be no remedy. What is required is a simpler and more economical system. Again, the results fees paid to any school depend upon too many contingencies and vary unduly. The effective differentiation of school from school for purposes of fees such as is aimed at by the present Board is both impracticable and undesirable. The group system has also failed to differentiate the curricula of the schools, and to allow schools to adapt themselves to the requirements of pupils and localities. It has also failed to ensure a continuous course of study except for a small proportion of pupils, and, above all, the examination system prevents the proper solution, through experiment, of many educational problems, it deprives teachers of initiative, takes no account of physical training, and imports an undesirable mercenary factor into school work.

The sum to be divided among schools is far from excessive, and should be allocated as a block grant to efficient schools. They should be free to frame their own curricula under the approval of the Central Board, should submit to inspection and conform to regulations for an annual examination, to which, however, no monetary award should attach. The grant should be on a fixed scale for each scholar above the age of thirteen for three years. It should be continued for two years more on advanced scholars. It would with the sum at present available amount to an average of not less than £6 per pupil. There should be two grades of external examinations conducted by the Central Board, one for pupils of sixteen or seventeen, and the other for pupils between seventeen and nineteen. The Lower School Certificate Examination should serve two purposes; first as a pass

examination guaranteeing a proper efficiency of instruction; and secondly, as a scholarship examination for pupils continuing at school. The Higher School Certificate should serve three purposes: (1) to supply a guarantee of the efficiency of the first grade intermediate schools; (2) serve as an entrance examination to universities, and (3) be a scholarship examination. There should be at least twenty scholarships of £50 a year for three years. The subjects of examination should be such as not to cramp the school curriculum, and a reasonable proportion of the pupils should be entered.

IV.—POSSIBILITY OF ESTABLISHING A PROFESSION OF INTERMEDIATE TEACHERS.

At present there is no profession, and the conditions of a profession do not exist. For there is no standard of qualifications, no satisfactory provision for training, few Irish teachers are registered, only seventy-eight in all, registration secures no special recognition, and salaries are lamentable. These defects must be remedied, but consideration must be taken of Irish conditions, especially in relation to the religious orders. While no recommendations are made for immediately increasing salaries, it is hoped that one common register for the United Kingdom would raise the remuneration of Irish teachers to the level of that in Great Britain. A pension scheme is recommended, and the central authority urged to encourage teachers to undertake original work, and to pay a small bonus to managers for every registered teacher.

HIGHER ELEMENTARY SCHOOLS.

THEIR PLACE IN A NATIONAL SCHEME OF EDUCATION.

THE new code¹, which lay on the tables of both Houses of Parliament from June 21st to July 21st, 1905, and comes into operation on August 1st, 1905, contains in Chapter VI. regulations for the provision and maintenance of higher elementary schools. These regulations are explained in a remarkably lucid, logical and convincing prefatory memorandum of five pages.

It is, perhaps, the first time that the Board of Education has stepped down and endeavoured to explain to us generally what it means by higher elementary education, and it is sincerely to be hoped that these most instructive pages will be copied and published by the press, and not left in the obscurity of a Blue-book.

We all knew what was meant by an elementary or primary school, and many of us understood the term secondary school, but few beyond the energetic School Board members in the cities in the North and Midlands ever clearly grasped the

¹ "Code of Regulations for Public Elementary Schools." (Wyman.) 3d.

meaning and potentiality of the higher grade school. Hence the searching of heart among the ratepayers when they saw laboratories and manual rooms spring up in the playgrounds of the elementary school.

But a place was found for the establishment of higher elementary schools in Section 22 of the Elementary Education Act of 1902, and the Board of Education has now formulated a scheme which should prove most valuable for those districts where there is a steady demand in skilled occupations for the services of young people. There are sixty-six boroughs in England and Wales with populations over 60,000, ranging from Bootle in Lancashire to Liverpool with three-quarters of a million. These towns are all prosperous and progressive, that is, there is a large and increasing section of their community which is advancing from mechanical labour to skilled work either in productive or distributive industries. The secondary school does not provide for this section, because its programme is based on the conception that the parents are from the first in a position to place their sons advantageously in the world. The general instruction of the elementary school is not sufficient for the skilled worker, because we do not only want mechanical work done accurately, but we want adaptability and intelligent understanding from our employés and tradespeople. In some cities the chief local industries may demand fine workmanship. In others, a high degree of manual skill may be less important than the power to use machinery or to handle materials used in construction, and to carry out the details of a design. In some industries a knowledge of the elements of chemistry and physics and dexterity in the use and construction of apparatus may be of constant use to the beginner. Similar in some centres of commercial activity the demand for a knowledge of some foreign language may be great, and in others the course of trade may be mainly with English-speaking countries. In rural districts the needs of agriculture will naturally exercise considerable influence in determining the character of the extra instruction of the elementary school.

These higher elementary schools, then, mark a step in advance; they are intended to solve the new problem of providing a more advanced knowledge and power of capacity in our industrial classes. They are not connected with what is known as higher education; they supplement the effort of the elementary school. For those who at the age of fifteen must begin an industrial employment, or enter the lower ranks of business, a training is to be given in which is developed more fully a study of some of the fundamental subjects of the elementary school curriculum, together with the study of those other subjects which he can apply to his own practical needs. A greater prominence is to be given to the immediate usefulness of the training provided for the scholars and of the knowledge acquired by them. But we are warned that this definite special instruction must not be begun at too early an age, must not be devoted exclusively to the cultivation of dexterity in the daily routine of a special employment

(though it may well be related to the requirements of a particular industry or group of industries), and must not displace the more general side of elementary education.

The story of the two boys has evidently struck deep in the official mind. One had received a liberal education; the other, an elementary scholar, had made himself highly proficient in shorthand. Both entered a merchant's office. Soon the shorthand boy became the master's clerk; he was trustworthy, diligent and dexterous. The other boy took some little time to find his bearings in the business, and to develop his capacity of understanding the things as wholes. At last some one was wanted to take charge of a new agency; the shorthand boy was much too precious to be parted with, besides he had, unconsciously perhaps, become useful in one direction; so the other boy was appointed. In a few years the agent returned as a managing partner to employ his old colleague as his shorthand clerk in turn. We are delighted to find a warning about this sort of education in these pages. Would that the warning could be repeated throughout the kingdom! This special dexterity which makes a boy so valuable too often chokes initiative, and at twenty-one the man only remains the boy with more agile fingers and a duller brain. Most rightly it is pointed out that the acquisition of mere skill in matters of routine is more effectively developed in the workshop or in the counting house, and though such matters need not be entirely excluded from a school course, if the Local Education Authority so determine, yet it would be a waste of time in the educational sense to give undue prominence to them or to attempt to differentiate a higher elementary school from an ordinary elementary school merely by the introduction of instruction of this kind. We venture to hope that the new authorities will not construe this part of the memorandum into an instruction to provide commercial schools simply to make boy labour more efficient at an earlier age.

If the worker desires efficiency, the encouragement given to the formation of evening schools by the new regulations¹ shows that the Board of Education is desirous of helping him when he is free from his daily occupation. These regulations are drawn so as to permit the direct adaptation of the course of instruction in each school to the needs of the locality. They are drafted with the view of encouraging sound organisation and continuous study, and they afford proportionate assistance to the useful if small and unambitious continuation classes of a rural school, as well as to the highly specialised work given in the best equipped of the technical colleges.

In Confidence: To Boys. By H. Bisseker. Revised by the Council of the Medical Officers of Schools Association. (Adlard.) 1s. net.—Fathers and schoolmasters will find this sensible booklet of great assistance in dealing with boys arriving at puberty. The author possesses tact and a kindly disposition.

¹ "Regulations for Evening Schools, Technical Institutions, and Schools of Art and Art Classes." (Wyman & Sons.) ad.

AMERICAN PLAYGROUNDS.¹

IN the matter of public recreation parks and playgrounds generally America is far behind England. The importance of play in the educational system has not hitherto been properly appreciated. So far from games being compulsory in American schools, it is estimated that not ten per cent. of the pupils in an American school are members of a regular club. The professional coach is practically unknown, whilst so much time and training is necessary for those who do play that an indulgence in sport means hard work. There is nothing comparable to our cricket and football, and the grave problem arises as to whether it would not be the wiser policy to have no leisure at all than to have no harmless means of employing what leisure there is. The American boy's (and girl's) lack of opportunity, if not disinclination, for sport is traceable to the utilitarian prejudices of his Puritan ancestors.

But the times have changed, and to-day there is a vigorous movement afoot for the provision of means of recreation for children in both municipal and school playgrounds.

New York now sets aside £60,000 a year for purchasing sites for playgrounds. To provide the 600,000 children of New York with adequate playground accommodation would probably require £20,000,000! Still, as we have remarked, a beginning has been made, and municipal playgrounds are gradually being laid out in many cities. They are intended for children under 15 years of age. They are usually surrounded by a separate fence, and contain gymnastic apparatus, swings, sand, &c.—this last feature being apparently suggested by the well-known sand gardens of Germany. Each playground, as a rule, is surrounded by a running track. There is a good out-door gymnasium, a basket ball-court, swings, seesaws, and some open space for general play—and sometimes a bath-house. In the new Seward Park playground there is a fine bath-house with 2,000 lockers. At 7 o'clock there are probably 7,000 children at play in the three acres of ground. A public school, to accommodate 4,500 pupils is to be built on the north side of the park. The former President of the United States Steel Corporation, Mr. Schwab, has done much good in the same direction. He purchased 65 acres of land in Staten Island, had it levelled, equipped with bath-houses, and amusements of all kinds. Hither the children of each of the schools and playgrounds in the city are brought by a special steamer to picnics, which include every kind of game, and a free dinner. The day's outing costs the child nothing from start to finish.

School playgrounds in America owe their origin to vacation schools, and had their origin in a sand-garden started in Boston, in 1886. Hitherto there have been six kinds of so-called playgrounds in New York. The first is the school-yard, consisting almost entirely of the basement of the building.

Many schools have also playgrounds on the roofs, though in hot weather, owing to their being uncovered, they are useless. Even in the newest schools the cemented playground admits of no organised game, except basket-ball, being played, and is really suitable only for kindergarten children.

Secondly, there are the evening-play centres, *i.e.*, rooms where indoor games can be played, with small gymnasiums, reading rooms, &c.

Next we have the roof playgrounds, open from 7 till 10 every evening. Parents and children under 14 are admitted. They are generally crowded on hot nights, and megaphones have to be requisitioned by the teachers in charge in organising the dances and choruses, so great is the noise. A band is paid £30 a week for its services, whilst £10 a week is paid to the teachers.

A fourth kind of playground is the outdoor playground. It generally consists of a vacant lot which is rented, or a park playground which is secured, equipped with gymnastic apparatus and provided with attendants. The playgrounds in New York are too small for base-ball.

Recreation piers constitute the fifth kind of New York "playground." They project into the rivers surrounding the city, and mothers are only too glad to escape with their children from the heat of their tenements to the cool, gaily-decorated pier.

Finally, there are the swimming-baths, where several thousands of children have been taught to swim each year.

The school-board playgrounds have met a great want and are nearly always crowded. It is estimated that three-fourths of the children who use them are at the schools themselves. Their uses are becoming more and more appreciated, though it is a curious fact that when they were first opened the children seemed not to know how to play. They depended entirely upon their teachers for the organisation of games, and any temporary inactivity on their part resulted immediately in the cessation of the children's interest. It must not, however, be supposed that the "playgrounds" are used entirely for play. Though this is the case in many of the smaller places, in New York itself there are four departments of playground employment—kindergarten, library, industrial work, and gymnastics and games.

The playground kindergarten is much the same as any other kindergarten: in it are the usual kindergarten games and songs, with paper folding, weaving, &c. The teachers experienced most difficulty when the time for "free play" came—especially in the inability or unwillingness of the child to realise that the toys then lent to him were not his personal property; consequently pilfering was a by no means uncommon occurrence. Again, there has been the question of the sanitary condition of the sand. After a day or two, experience showed that the mixture of sand, water-melons, and bread-and-butter, conduced neither to attractiveness nor healthiness. The sand in the trays is now changed every week.

¹ Vacation Schools, Playgrounds and Settlements. Henry S. Curtis, Ph.D. (Report of the U.S. Commissioners of Education, 1903, vol. 1.)

Comparatively little attention has been given to the library department of the playground. In New York the library has usually occupied one of the class-rooms; there are a few papers and young people's magazines, with 50-100 books. The latter however, cannot be taken home; and this is inconvenient, as the child cannot be sure of getting the same book the next day. As may be imagined, the position of a librarian is not a sinecure. She must not only keep order and ensure a fair degree of silence, but must also be able to teach the children quiet games, advise them as to what books they should read, keep a check on the articles lent, and be a good story-teller.

The industrial work in the playgrounds was at first largely confined to sewing and basket-weaving, but now there are cooking and carpentry classes. Constructive "play" has been found to afford considerable interest to the children.

Gymnastics and games constitute the fourth kind of playground activities. In addition to the usual playground games many new ones have been imported from Germany. Of these, "three deep" is the most popular. The children are formed into two concentric circles, so that each child in the inner ring stands in front of a child in the outer ring. There are also a runner and a chaser. The runner darts round the ring and stops either before or behind some child in the circle, thus making the line three deep. If the chaser can touch the runner before he does this, or the third child in the line before he runs away, the child touched must be the chaser and the former becomes the runner. When the runner does not run too far before stopping, the game is very exciting. Each playground in New York is equipped with a good gymnasium, where there are regular gymnastic drills, and there is to be a shower bath attached to each gymnasium. Inter-playground competitions have proved useful in developing *esprit de corps*.

With regard to the value or otherwise of organised play, it seems to be the common experience that children will always flock into the game being played by the teacher and abandon their own games. (It is to be remembered that "playground" teachers receive separate payment.) That it is really worth while to supply, equip and maintain these playgrounds admits of little doubt. The police bear witness to the benefits conferred both upon the children and society at large by their introduction, and there is every reason to believe that they have come to stay. Dr. Curtis advocates the introduction of games into the curriculum, and it is his opinion that "compulsory games" would result in a great improvement in the attitude of teachers and scholars to each other if they might play together more often.

The Ready Register. 14 pp. (Simpkin, Marshall). 1s. net.—This is an excellent register of attendances. Provision is made for sixty names, which need be written only once during the year. One column is ruled for addresses, and another is provided to meet cases of removal. It is clearly printed on very good paper, and its folding flap of stout blotting paper is a most useful provision.

SCHOOL TEACHING AND SCHOOL REFORM.¹

THIS book is hard to classify. It is by no means necessary that a work should fall into some consecrated category; but in this case the name of the writer, and, it must be added, his air, suggests so flagrantly a previous scientific study of the various themes, that the prejudiced reviewer, while he may be diverted, is also puzzled by the incurable amateurishness of the whole performance.

Sir Oliver Lodge addresses himself—piece-meal, mind—to many of the current education controversies, and delivers himself on each with little reservation. It is impossible to find in the concatenated passages any central or guiding principle; *obiter dicta* are they all. Let the reviewer at once say that in most of the main points his author is sound; that is, his views are the views of the reviewer; but for nine-tenths of them he gives (what seem to the reviewer) the wrong reasons—certainly reasons which will not convince a hostile critic.

A good deal of space is taken up with the now out-of-date controversy between the classical and science gymnastic; the whole of this, in the form in which the book presents it, is a "back number." With the denunciation of the sterile treatment of Latin and Greek as intellectual discipline it is impossible not to sympathise; but more than implicit in Sir Oliver's treatment of the subject is the thoroughly unscientific view which he quotes (apparently approvingly) from Sir William Huggins, to the effect that "our higher education . . . deals with words rather than things; it is based too exclusively on the memory of what is known, and too little, if at all, on individual observation and reasoning." This is the key-note. To Sir Oliver and Sir William the world is divided between Words and Things; there are apparently no Ideas; and "individual observation and reasoning" have, apparently, no truck with "memory of what is known." But while there is no sense of the unity of the mind, the central principle of modern psychology, so also there is small scientific consistency about our author, for he quotes, with assent, a passage from "an eminent medical teacher of the last generation" who said that "ideas are causes not only of life and thought but of all the phenomena of creation." This, however, is in a passage dealing with Moral and Religious Teaching; you will often find that empirical philosophers deny life to all ideas except certain remarkable moral and religious entities which are neither Words nor Things. This is indeed, their good angel having his say.

Sir Oliver's case is surely strong enough without any question-begging, which is the bane of the unscientific treatment of such subjects. Education is neither in "things" nor in "words," but in ideas. "Attention and concentration," says he, "should

¹ "School Teaching and School Reform." By Sir Oliver Lodge. 171 pp. (Williams and Norgate.) 3s. net.

be the fruit of education"—but not the only fruit; one ought not first to denounce mere gymnastic and then to proclaim its supreme importance. "Language" is merely a "tool"; but when "really known" languages are a "means of expressing thoughts and recording impressions and emotions." Very conveniently, the relation of language or languages to these last is not discussed.

Again, studies in grammar and philology should be deferred, according to our author, till "maturity," because they are "scientific"; and yet he defends the study of physics in school on precisely the same ground as justify the inclusion, in like manner and measure, of grammar and philology: "it is a unification and systematism of what else would be discarded—fragments of common experience."

Little help will be got out of Sir Oliver's treatment of history. This to him is apparently all politics; but of its inestimable value as a pageant, in training the sympathetic imagination, though he is certainly aware of it, he says nothing. His *obiter dicta* on literature are excellent, his logic appalling. "I read some Newton . . . it is not, I perceive, suited for reading for enjoyment, except by a physicist, *but it is perfect in style for its purpose*, and hence I claim it as literature";—and this after the specific exclusion of Bradshaw! Bradshaw has its faults, but is it not perfect in style for its purpose? Sir Oliver cannot define literature—small blame to him—but he ought not to affect by implication to do so; a fault very characteristic of him and profoundly unscientific. "Hasty and compulsory expression is sure to be artificial and of little use"; but what is "compulsory expression"? Are we not all agreed that in every sort of moral and intellectual activity, at every stage, expression is inevitable—and essential?

Particularly notable is Sir Oliver's careless use of words. He denounces rightly (and we who read this book may well take warning) the tendency of the ignorant "to elevate into an oracular" (an oddly used word) "and trustworthy utterance even a casual assertion or side reference of a truly great man. Infallibility of this kind is sickly and infantile, and is not to be expected even from the greatest of prophets." He means, in the first half of this last sentence, *the belief* in infallibility, and in the second the sacred thing itself. "It is by the study of history that man is differentiated from other animals, who live only in the present." But man may be man and study no history at all; by "study of history" he means merely the time-consciousness. If only Sir Oliver had gone further with his language studies! The little more and how much it is . . . ! He should not write of Prof. Mach, "whose works have many of them been translated." And in "I have no faith in the natural badness of children when wisely treated" we recognise his good judgment and robust humanity, but only because by *faith* he means *belief*.

These criticisms are not mere carping; the errors which they illustrate are of the essence of Sir Oliver's character as a guide in subjects which call for exact philosophical precision as well as

sound sense and intuition. He is in too eminent a position to be allowed faults which would be pardonable in an ordinary ill-educated pedagogue. Yet in many points of great present importance he is right and puts his case well. On his own special subject, physics; on the dangers of "consolidation and thoroughness" in the early stages of education (heuristics please note); on learning by heart; on the training of teachers; on the length of study; on the claims of leisure; on standards of examination; on the first-rate necessity of associating teachers in the public examination of their pupils; on the teaching of geography; on the true meaning of utility—on these more than one pregnant passage could be quoted from his book. But we regret that before giving his views to the world he has not found a consistent scientific basis for them, and that he has presented them in so careless a fashion.

There is no index to the book.

DOMESTIC SCIENCE IN AMERICAN SCHOOLS.¹

IN this exhaustive report upon the teaching of domestic science in the United States, Miss Ravenhill deals with every phase of the subject. Her enquiry extends from the early days in 1876, when instruction in the elements of needlework, simple training in housewifery—under the name of "kitchen gardening"—and lessons in plain cooking were given to the children of the poorer classes, under the auspices of the Young Women's Christian Association, to the present day when it is being introduced, in one guise or another, into nearly every type of public and private school.

There appear to be three classes of opinion as to the character, position and methods to be employed:—

(1) The utilitarian party who desire to secure instruction for girls in cookery, sewing, cleaning and the elements of house sanitation with the sole view of preparing the home-makers of the future for the duties which will devolve upon them; and by this means to raise the standard of health and happiness among the people. The supporters of this opinion ask, therefore, that practical work in domestic subjects shall be included at an age which shall secure its advantages for all girls before "leakage" sets in, and that the course shall bear as directly as may be upon the immediate economic necessities of the pupils. . . .

(2) The manual training advocates, who hopefully anticipate the attainment of two or even three ends, viz., the acquirement of . . . quick observation, rapid circulation between hand and eye, careful precision and skilled fingers, by means of and coupled with increased command of household arts. In addition they hope that a realisation of the dexterity and thought demanded by right manipulation will lend new dignity to the materials employed, and to the home in which they find their natural place.

(3) Those who have recognised the real educational importance of the subject in all its fulness and scope, when judiciously introduced into the schools, quite apart from immediate utility, or from possible acquirement of manual dexterity. The supporters of this view consider the former conceptions incomplete, possibly mistaken, estimates of its real worth. To them its value lies in the field it offers for the application of scientific

¹ Special Reports on Educational Subjects, vol. 15. "The Teaching of Domestic Science in the United States of America." 374 pp. By A. Ravenhill. (Wyman.) Price 1s. 9d.

knowledge, and for the exercise of the arts ; in the strong social links it forges between school and home life at an early period ; in the dignity in domestic matters at a later stage, and in the introduction which it involves to economical and sociology problems when studied in its entirety by more advanced students.

It would seem that the exponents of the third view are gaining ground, for about thirty of the State universities or colleges have already initiated courses in household science which lead to the Bachelor of Science degree.

It was the general opinion of the Mosely Commissioners that cookery and sewing are not so well taught in America as in England. It would appear, however, from Miss Ravenhill's careful observations that, although our practical work may be superior, there is much we may learn from the United States' schools in the broader and more educational methods of dealing with domestic science, or home economics. She notes that "the original purely utilitarian spirit which led to the introduction of domestic science is now somewhat adversely criticised, and often strongly resisted, while the undoubted pedagogical and sociological value of the subject is emphasised and evidenced under its ablest exponents."

Tables XXI. and XXII., which give an abstract of the year's work in Dr. Dewey's elementary and high schools, attached to Chicago University, are "the best illustrations of the means by which the domestic, equally with other sciences and arts, may be educationally employed, to make schools for our children of all ages a genuine form of active community life, instead of places set apart to learn lessons." These tables, too long to quote here, are full of inspiration, and well repay careful study, bearing in mind Dr. Dewey's expressed opinion that it is those subjects develop the young intelligence of the child which

(1) Forge social links between school and home ;

(2) can be acquired largely in the first instance through the exercise of bodily activities ;

(3) are so interwoven with family life as to appeal to the limited familiar experience of a young child ; and

(4) demand thought, yet by their simplicity permit that thought to function in actions, habitual or suitably acquired at the special period of life at which the lesson requires them.

In so short a review of Miss Ravenhill's comprehensive report, it is only possible to indicate the trend of opinion in the United States on domestic science as an educational subject. Comparisons between English and American methods are not quite possible, for it must be remembered that the pupils of the grade schools in the States are drawn from all classes, and as Miss Ravenhill remarks, the general standards of intelligence, nutrition and energy are higher than in our English elementary schools.

The report may be commended to all interested in education. The heads of secondary schools for girls may well ask themselves whether the methods advocated by the third or educational party in America cannot be adapted for use in England. So long as domestic science is regarded as the Cinderella of the sciences, so long will our domestic problems remain unsolved.

SHAKESPEAREAN TRAGEDY.¹

THIS book is one of those stimulating volumes which operate by a subtle suggestiveness hard indeed to define but of the most obvious power. What may be called "the grip" of the volume is of a singularly intense kind. It is difficult to lay it down, and every page of it is equally potent to maintain a student's attention. But with this power there also goes another, the power to make one think. Prof. Bradley is always lucid and literary, but he gives his readers in these pages the sensation of those who only turn angles and corners to see stretching before them long vistas of captivating scenery. We think this will be found to be the almost universal impression produced upon the readers of these pages. The criticism is exact, deep, and scholarly enough, but one is never allowed to forget that here is a genuine professor of poetry at work upon one aspect of the work of our greatest dramatist, who brings to the consideration of his subject just as high a degree of imaginative penetration as has ever been the endowment of the ablest and most masterly of all Shakespeare's multitudinous critics ; and if their number is few their work in the past has appreciably added to the classics of our language. To the great names of Lamb, Hazlitt, Coleridge, and Mr. A. C. Swinburne and to that of the prince of critics Goethe, Prof. Bradley's name has now to be added ; we believe he has written a volume which will take rank with any of theirs. He himself proclaims an indebtedness to Prof. Dowden, and moreover confesses that this book has been written after laying his subject aside for many years. But we believe Prof. Dowden himself would recognise a master in Prof. Bradley, and the admitted circumstances of the composition of these pages only render them more wonderful as a contribution to literary criticism.

Yet the lectures which are the subject matter of the volume only aim at considering the four principal tragedies of Shakespeare, namely "Hamlet," "Othello," "King Lear," and "Macbeth" ; and these only from a single point of view. Shakespeare's place in the history of English letters, or in the history of the drama ; his relation to other writers and dramatists ; questions of his life and character, of the development of his genius, and all critical questions concerned with his text, his language, his metre and half a score of subjects mainly of interest to grammarians ; all these are lightly left on one side as being out of the circle, as it were ; they are not vital and have little to do with that dramatic appreciation which is Prof. Bradley's main object.

Those who read these pages with the care and interest which are their due from any lovers of Shakespeare will find their understanding and enjoyment of these four tragedies immensely deepened. The principal personages in each are made so vivid in the criticism that their actions

¹ Shakespearean Tragedy. By Prof. A. G. Bradley. 498 pp. (Macmillan.) 10s. net.

seem absolutely natural, for even where this author adopts a new point of view, or deliberately sets aside accepted explanations, he does it in a profoundly convincing way. Sure of his own psychology, he has no trouble in making any reader, who takes a little time to think and to feel what possibly Shakespeare felt as he wrote, fall in with his view without hesitation, and, indeed, some sense of surprise that any other view ever gained sway over him. And independent of the four tragedies in question, this volume supplies a wonderful and luminous appreciation of what Shakespeare himself took to be the meaning of tragedy in human life. This is the basis upon which the whole edifice of criticism in these lectures is erected, and although space does not permit us to go carefully through Prof. Bradley's analysis of this fundamental thought, we can cordially recommend his treatment of it to all and sundry. Its depth of insight, its subtlety of analysis, its exhibition of deep human sympathy and of the conviction which is born of love alone, are marvellous and penetrating.

If we quote Prof. Bradley's final words on this topic we give the gist of his contention. "There is no tragedy in its (*i.e.*, the world's) expulsion of evil; the tragedy is that this involves the waste of good. . . . We remain confronted with the inexplicable fact, or the no less inexplicable appearance, of a world travailing for perfection, but bringing to birth together with glorious good an evil which it is able to overcome only by self torture and self waste." And that, says the Professor, is the essence of Shakespeare's view of the tragic life.

NATURE STUDY AS A POINT OF VIEW.¹

NOW that the first indiscriminate enthusiasm for anything and everything which could be possibly styled Nature Study has somewhat subsided, it becomes increasingly evident to what an extent a fetich has been made of a term which in itself possesses little more virtue than "the blessed word Mesopotamia." Publishers have vied with one another in throwing upon the market masses of text-books, readers, drawing cards, calendars and so forth, which had the one common feature that they were all labelled "Nature Study." Bewildered teachers accepted them in turn in the fervent trust that here at last was "the very thing," in general only to be disappointed. For the truth is that, with a very few exceptions, the publications failed in the one essential which gives nature study its value. This may be expressed briefly by saying that nature

study is simply the heuristic method applied to the study of the out-door world, and that it possesses precisely the virtues and limitations of the same method applied to elementary physics and chemistry. Its peculiar advantage is that it is concerned with matters which are of interest to every healthy-minded child, man and woman, whereas the appeal of the physical sciences must of necessity be much more limited. Now, the essential feature of the heuristic method is that it regards the *fact* not as an end in itself, but as a tool in the cultivation of a certain habitual attitude of mind.

Nature study itself must be considered from a similar point of view: the fact that an insect has six legs is of no more consequence than that a billiard-table has eight. What is of importance is that nature study should cultivate the habit of close observation and the power of reasoning sanely from the facts observed; and it is in the instinct for selecting for study the facts which are most vital and will open out the greatest number of avenues for thought that the genius of the teacher is displayed. It is, indeed, mainly lack of imagination on the part of the teachers taking nature study which has often justified the gibes of unbelievers. "What common animal has no eyebrows?" was the conundrum once proposed by a worthy schoolmaster of our acquaintance to his "nature study" class. "What common animal has no sense of humour?" might well be asked as a counter-query.

The average teacher needs guidance in his nature study work, it will be admitted. It is too much to assume that he already possesses the information necessary for the planning of his lessons. The ideal text-book will not only furnish such information: it will also suggest schemes of practical work calculated to bring out the best powers of his pupils.

Mr. Latter's book is exactly the one to put into the hands of a class the teacher of which either possesses the preliminary knowledge referred to above or is content to be a fellow-worker with his pupils. The volume takes the form of a practical note-book, alternate pages being left blank and each exercise being followed by a space for the record of the observation. It may be pointed out that the copper-reduction test for sugar, described on p. 173, would not succeed with "ordinary powdered white sugar," but this is the only slip we have noted. It is impossible to speak too highly of the skill with which the questions have been framed, but the fact that in scarcely any case is the answer given will, we think, somewhat limit the sphere of the book's usefulness to teachers. Mrs. McMurry's book, on the other hand, is manifestly intended for the use of the teacher only, as the answer is immediately given in brackets after each question. The lessons are intended for quite young children and are admirably worked out. These two books, so different in style, are alike in being instinct with the spirit we have tried to indicate. They will be heartily welcomed by true educationists.

"Butterflies and Bees" serves further to

¹ "Practical Nature Study for Schools." Part I.: Questions for Pupils. By Oswald H. Latter. 282 pp. (Dent.) 2s. 6d. net.
 "Nature Study Lessons for Primary Grades." By Mrs. L. B. McMurry. xi. + 191 pp. (The Macmillan Co.) 2s. 6d. net.
 "Butterflies and Bees." By Margaret W. Morley. vii. + 267 pp. (Ginn.) 3s.

emphasise our point. It is brightly and accurately written. It deals with one of the most fascinating branches of natural history, but in it the *fact* is paramount; the spirit of research is scarcely to be traced in it. It is not, therefore, in our sense, a book of nature study, but it must in fairness be added that it does not profess to be one.

THE GERMAN LEAVING CERTIFICATE.

ON the expediency of introducing some system of Leaving Certificate into secondary schools there can scarcely be two opinions. To the public it would mean a State guarantee of a liberal education; in the class-room a new and powerful incentive to work; and to the schoolmaster, groaning in his fetters, it would mean the realisation of his dreams of freedom. As ulterior results there would be the awakening of a real public interest in education, and the gradual extinction of cheap and inefficient private schools.

The only question likely to arise concerns the particular plan to be adopted, and in deciding this educationists are fortunate in having the experience of two countries, famous for their scholastic achievements, to guide them. The Scottish system, however, is not out of the experimental stage yet. It differs fundamentally from the German system in that its examination is still an external one, careful inspection being chiefly relied on to keep the examiners in touch with the schools. It comprises a Leaving Certificate (minimum age 17) and an Intermediate Certificate (minimum age 15), the passes being accorded in specified groups of subjects. Of the German system the essential feature is that the examination is conducted to a great extent by the schools themselves.

The German system has been described by other writers, but we are glad to be able to reproduce the essential parts of an interesting pamphlet¹ on the German Leaving Certificate, by Mr. W. Edwards, of the Bradford Grammar School. The pamphlet has been compiled with a thoroughness that will win the approval of the methodical people whose methods the author describes, and with a clearness and simplicity that may well excite their envy.

Those of our readers who look askance at German bureaucratic methods and are fearful lest the English schoolmaster should find himself delivered up, bound with red tape, into the hands of Government officials, need feel no hesitation in reading the following extracts. Their author is in no way obsessed by the super-excellence of things Teutonic. He roundly declares that to secure a dead level of uniformity at the expense of our native elasticity would be an unpardonable sacrifice. But, as he remarks, there is all the difference in the world between rigidity and disorganisation.

After describing the examination chaos in England Mr. Edwards proceeds to give an account of the Leaving Examination in Germany, "the most successful example of such a scheme in modern times." Its practicability, he says, is in no small measure due to the regular mechanism of the whole organisation, the salient characteristics of which are State control, definite classification of schools, uniformity and precision in curriculum, terminology and standard.

Describing the gradual development of the Leaving Examination under State control, he quotes Prof. Sadler. "The tendency of the time had proved irresistible, and the State had been compelled, almost against its will, to convert a test

originally intended for stimulus into the normal qualification for youths preparing themselves for professional life. The school leaving examination was made the sole gate of entrance to the studies required in preparation for all branches of professional life. State control gradually becomes complete. It is the State which conducts the examinations for admission to the different professions; the State determines the range of studies in the secondary schools; the State fixes the standard required for the Leaving Examination. It alone bestows on the schools the privilege of qualifying the scholars for the course of study prescribed for the various professional careers."

The far-reaching effect of the Leaving Certificate and the general interest created in secondary education are then pointed out. The importance of the Leaving Certificate is at once apparent. On its possession the boy depends for his career, and parents will make any sacrifice of personal effort and money in order that their boys may obtain it. The success, indeed, of the German Leaving Certificate is largely due to the fact that it alone entitles to certain privileges. Of these the chief are

(1) Admission to studies at the universities and technical schools and to the examinations for Government appointments.

(2) Exemption from one of the years of compulsory military service.

As the burden of military service affects every one in the country, this latter privilege provides a stimulus and a motive force which is without parallel in England. . . . The result is that there is created an intelligent interest and widespread appreciation of secondary education. This manifests itself in a marked degree in the sphere of commerce. A respectable firm of any standing requires in its clerks the certificate exempting from one of the years of compulsory military service. The German clerk who comes to England and whose talents in languages enable him to displace English clerks, comes from a secondary school. His English competitor comes from an elementary school.

It is evident that the German Leaving Certificate is accepted with confidence, not only by the official authorities, but also by business men and employers generally as implying a definitely high standard of education. This ready recognition is, I believe, to be ascribed to the fact that the certificate is essentially a State certificate, and the State holds itself responsible for the standard of the examination. Similarly, in England, where rightly or wrongly business men look with distrust on anything with an academic flavour about it, the Leaving Certificate, if it is to win national confidence, must be a State certificate with a State guarantee of its standard.

The Leaving Examinations are taken by the boys in the top class. But only those boys are allowed to sit who are declared "ripe" by their teachers. The usual age of the successful candidates in the nine years' course schools is 18-19, in the six years' course schools 16-17. The Leaving Certificate involves no dislocation of school work. Its object is to testify that the boy has been through a regular course of school study and has received a good liberal education. With reference to this point Mr. Edwards says: "A cardinal difference between the German and English ideas of a certificate is that in Germany the certificate guarantees that the boy has pursued a *regular course of school study*, and exacts this school education as its main requirement; in England a certificate merely connotes the possession of a certain quota of knowledge without any consideration of the way in which that knowledge has been acquired. Hence the autocracy of the external examiner, the dislocation of work, the vogue of the crammer, and the absolute worthlessness of the certificate as evidence of an *education*." We have here the key to the principles on which the examination is conducted and the certificate granted. It is not given merely on the result of a paper examination, with identical questions for all schools, and con-

¹ Published by the Bradford Education Committee.

ducted by examiners having no personal knowledge of the candidates, but it is based on a comparison of the school record of the boy with the result of an examination, oral as well as written, conducted by those who have taught the boy, and under the presidency of an inspector who is acquainted with the work of the school. In the award of the certificate, moreover, the school record counts in theory as much as the combined written and oral examination.

The Leaving Examination is held twice a year, in March and September. Only boys who have been a year at least in the top class may apply for admission. There is no age limit. The boy is simply kept in the lower division of the class till he is "ripe." No boy is allowed more than two attempts. If he fails twice in the examination he is precluded from entering again.

The examination for each school is controlled by an Examination Board (Prüfungskommission). This board is made up of the inspector, who presides, the headmaster, and the teachers to whom the instruction of the highest classes has been entrusted. The inspector may nominate a representative to take his place, and often does appoint the headmaster to act for him. The inspector (a Royal official appointed by the State) must be one acquainted with the working of the particular school.

Three months before the end of the school half-year, the applications of candidates have to be sent in to the headmaster. The teachers also prepare a report on the character and past work of the boy.

A conference is then held of the headmaster and the teachers who are on the Examination Board, and at this conference the applications are reviewed and the reports on each boy considered. The conference then decides whether the boy is "ripe" or not. If the unanimous decision of the conference is that the boy is not "ripe," he is excluded from the examination. In other cases the boy is marked as either "doubtful" or "not doubtful." The conference then draws up in full for each boy the report which will be entered in the certificate (should he be successful) under the head of Conduct and Industry.

The examination is partly written and partly oral.

The questions, or rather exercises, for the examination are not as in England set by external examiners. The teacher chooses three times as many exercises as are required. These are submitted for approval or revision to the headmaster, who sends them on to the Provinzial-Schul-Kollegium. The inspector attached to the school chooses from these questions those which he wishes to be set. He returns them in a sealed envelope to the headmaster, with a mark against those which he has chosen. On the day of the examination, which is supervised by the headmaster or one of the teachers on the Examination Board, the envelope is opened by the teacher of the subject. The questions, which are not printed, are then dictated to the candidates. From three to five hours are allowed for each paper, the time to be reckoned from the end of the dictation. All the work is then collected and handed over to the teacher of the subject. This teacher examines the work and corrects it, adding the reasons for his correction. Finally, he affixes a mark to the work. This mark must be either "very good," "good," "satisfactory," or "unsatisfactory." After the work in all the subjects has been treated in this way, it is circulated among the teachers on the Examination Board.

A conference is then held of the headmaster and these teachers, the verdicts on the different work are compared, and a decision come to as to whether the boy should be excluded from the oral examination, exempted from it, or required to undergo it. The headmaster then sends to the inspector the work and the questions, the verdict of the teachers on the class

work of the boy, and the various decisions. The inspector looks through some of the work and has power to demand a revision of the decisions.

Immediately before the oral examination, a conference of the full Examination Board is held under the presidency of the inspector. At this meeting, the inspector, after criticising the work and the questions, takes a final vote as to whether the candidate shall be excluded from, exempted from or required to undergo the oral examination.

The time for this is appointed by the inspector. It is conducted in his presence by the teachers in the various subjects, but the inspector may himself interpose, and the control of the conduct of the examination rests with him. At the end of the oral examination the teacher proposes a verdict of "very good," "good," "satisfactory" or "unsatisfactory," and this verdict stands if approved by the Examination Board.

The Board then meets to decide finally whether the boy is to be passed or not. The verdicts on the class work for the year and the verdicts on the whole examination for each subject are first considered in combination, and a final verdict on the whole of the work of each boy in each subject is arrived at. Failure in one subject may be compensated by a verdict of "good" in another, with certain limitations.

Dealing with the question of the standard of the examination and the maintenance of uniformity of standard throughout the country, Mr. Edwards says:—

It is very difficult to define a standard in so many words, but an approximate idea may be gained from a consideration of the professed aim of the examination and the percentage of successes and failures. In the nine years' course schools, out of 6,531 boys who submitted themselves for examination (I exclude the outside candidates attached to the different schools), 505, or about 7.7 per cent. were rejected as "not ripe" for admission to the examination. Out of the 6,026 who sat for the examination, 5,818, or about 96.5 per cent., passed. The figures for the six years' course schools are very similar.

A more difficult problem is involved in the question as to how uniformity of standard is secured throughout the country. The fact is, I believe, that the standard is not uniform. The factors which tend to maintain an equality of standard seem to be:—

- (1) The rigid prescription of the curriculum.
- (2) The fact that the teachers have all been trained in the same way, and that the teaching profession is an organised profession with definite and precise aims.
- (3) The standard of professional honour, which is said to be so high that an ordinary teacher would rather commit suicide than cram up his boys beforehand to pass in the questions set by himself!

The features of the German Leaving Examination which are most instructive to us in England, Mr. Edwards gives as follows:—

- (1) The pupil is entirely free from external examinations until the end of his school course.
 - (2) There is no simultaneous examination conducted by means of printed papers of identical questions set by a single body of external examiners.
 - (3) The examination is oral as well as written.
 - (4) The examination is not competitive.
 - (5) The whole school career of the boy is taken into account in awarding the certificate.
 - (6) The teachers co-operate in the examination.
 - (7) The certificates have a uniform value.
 - (8) The certificate is a State certificate, and there is a general appreciation of its value.
 - (9) The examination is entirely free from university control.
- Discussing the application of the lessons of the German

examination to the question in England, Mr. Edwards lays down several important principles:—

(1) The candidate should have received instruction for a certain number of years in an efficient secondary school.

(2) The boy should be free from external examinations up to the age of fifteen at least.

(3) The examination should follow the curriculum, and not the curriculum the examination. That is, recognition of the curriculum of a school is to be substituted for the imposition of an external syllabus.

(4) The teachers should co-operate in the examination.

With regard to the examining bodies, while admitting the need of variety, Mr. Edwards insists on the necessity for strong central control.

The whole object of the institution of the Leaving Certificates would be defeated if some means were not devised, not only of securing the interchangeability of the certificates, but also of maintaining a national standard, and thereby winning the national confidence. We do not want State control of our universities, and if we only desire to have a uniform certificate for boys who proceed to the universities, merely as a substitute for the matriculation examinations, the universities may agree among themselves, and there is no need for State interference. But we require more. We need a certificate which will be applicable and of use to that great mass of boys who leave at sixteen and follow a business and commercial career, a national certificate which will be recognised and accepted by business men and the public generally. The first condition of success, then, in any scheme is that there should be a national confidence in the value of the certificate. If this object is to be achieved the certificate should be a State certificate, and the State should make itself responsible for it. Such is the case in Germany. This does not, of course, necessitate a single examining body, but it does imply that the Central Board must be a Board with real and substantial control. The Central Board of the Consultative Committee's proposals smacks more of a Board of Arbitration than a Board of Control. The first step to be taken, it would seem, is to constitute a strong Central Board which should not content itself with vaguely overlooking the various examining bodies and securing interchangeability of certificates, but should see that the standard of the certificate is rigidly kept up, should accord recognition to examining bodies, and should lay down and enforce conditions on which it accords that recognition. If the Board is liberally constituted, there is no fear that these conditions will be conceived in any narrow spirit. In a word, the constitution and powers of the Central Board must be such that in recognising any examining body it gives its cachet to the certificate awarded on the examination by that body, and it accepts the responsibility for the standard of that certificate. It might be well also if the certificate itself were a State document with the official seal, and with the academic element relegated to the background.

In conclusion, the danger of any attempt to graft an alien system on a country with different national characteristics is pointed out. No one, indeed, who has studied Continental methods of education can fail to have been impressed with the perfection of the German educational machinery, but this very minuteness of organisation not only renders reform difficult, if not impossible, but also tends to stifle the highest elements in education. A certain petrification inevitably results when the factory system is applied to living beings. In the formation of character, in the development of the power of initiative, in stimulating mental activity, in the promotion of all those qualities which make our real citizens and rulers of men, even Continental critics admit that our English schools stand unrivalled. Granted that our public schools fall short in that organised efficiency and coherence of which we hear so much,

they possess a far more valuable asset. To infuse into a new system such a spirit and atmosphere as pervades our public schools would be a herculean task; it is comparatively easy, a mere matter of engineering, to adjust the details of school organisation to a more complete uniformity. The one is only a matter of administration, the other a revolution. In a word, what the Germans are in danger of lacking is a matter of essentials, what we lack is accidental and remediable. But when all this is said, many profitable lessons may be learnt from a study of other systems than our own. Even the mistakes of others are instructive. In England the tendency is to draw education more and more under the influence of the State. We have before us in Germany the great example of a State-directed educational system with all its blessings and evils. There is ample margin for beneficial State influence in England, but the history of State intervention in higher education in this country has not hitherto been too encouraging.

CAMBRIDGE UNIVERSITY LOCAL EXAMINATIONS.

SET SUBJECTS FOR DECEMBER, 1906.

[The complete Regulations for 1906 can be obtained from the General Secretary or from the Local Secretaries on and after December 13th, 1905.]

RELIGIOUS KNOWLEDGE:—*Preliminary*.—(a) St. Luke ix.-xviii.; or (for Jewish Students only) II. Samuel v.-xx.; (b) Ezra and Nehemiah.

Juniors.—(a) Ezra, Nehemiah, Jeremiah xxvi.-xxviii., xxxiv.-xliv., lii.; (b) St. Luke; or (for Jewish Students only) II. Samuel; (c) the Acts of the Apostles xiii.-xxviii.

Seniors.—(a), (b), (c), as Juniors.

ENGLISH LANGUAGE AND LITERATURE:—*Preliminary*.—(c) Scott, "The Lady of the Lake," Cantos i. and v.; or (d) Keary, "Heroes of Asgard."

Juniors.—(b) Shakespeare, "Henry V"; (c) Scott, "The Lady of the Lake"; (d) a paper of questions of a general, not a detailed, character, on "Coverley Papers from the Spectator" (ed. K. Deighton, Macmillan and Co.), and Tennyson, "The Coming of Arthur," "The Passing of Arthur."

Seniors.—(b) Shakespeare, "Henry V."; (c) Tennyson, "The Coming of Arthur," "The Holy Grail," "The Passing of Arthur"; (d) a paper of questions of a general, not a detailed, character, on Shakespeare, "The Tempest"; Scott, "Old Mortality"; Byron, "Childe Harold," Canto III.; (e) a paper of easy questions testing the candidates' general knowledge of English Literature not earlier than 1579 A.D. Candidates may consult Stopford Brooke's "English Literature" or some similar work. They will not be expected to show acquaintance with minor authors or biographical details. The questions will not be limited to text-book knowledge.

HISTORY, GEOGRAPHY, ETC.:—*Preliminary*.—History of England. The paper will consist of three sections on the periods (a) 1066 to 1485, (b) 1485 to 1603, (c) 1603 to 1714 respectively. Candidates may if they wish select questions from all three of the sections, or may confine themselves to two or one of them.

Geography. Great Britain; and general Geography.

Juniors.—(a) History of England. The paper will consist of three sections on the periods (a) 1066 to 1509, (b) 1509 to 1688, (c) 1688 to 1832 respectively. Candidates may if they wish select questions from all three of the sections, or may confine themselves to two or one of them; or (b) Outlines of the History

of the British Empire from A.D. 1492 to A.D. 1784; or (c) Outlines of Roman History from B.C. 266 to B.C. 133.

(d) Geography. The United Kingdom of Great Britain and Ireland, and Asia.

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 Juniors; or (c) Roman History as Juniors.

(d) Geography as Juniors.

LATIN :—*Preliminary.*—F. Ritchie, "Fabulae Faciles," Part III., "The Argonauts and Ulysses" (Rivingtons).

Juniors.—Caesar, "De bello Gallico VI"; or Virgil "Aeneid VI."

Seniors.—Tacitus, "Agricola"; or Cicero "De Amicitia"; Virgil, "Aeneid VI"; or Horace, "Odes II. and IV."

GREEK :—*Preliminary.*—Sidgwick, "First Greek Reading Book," 3rd edition, Exercises 1-50 (Rivingtons).

Juniors.—Xenophon, "Anabasis V.,"; or Euripides, "Alcestis" (omitting lines 86-136, 213-244, 435-475, 569-605, 962-1005).

Seniors.—Thucydides I. 24-87; or Lucian, "Somnium" and "Piscator"; Homer, "Odyssey" V., VI.; or Euripides, "Alcestis."

FRENCH :—*Juniors.*—Erckmann-Chatrion, "Le Blocus," Chapters 1-13.

Seniors.—Molière, "L'Avare"; Erckmann-Chatrion, "Le Blocus."

GERMAN :—*Juniors.*—Hauff, "Die Karavane" (omitting "Die Errettung Fatme's"); or Riehl, "Culturgeschichtliche Novellen," "Der stumme Ratsherr," "Der Dachs auf Lichtmess," "Der Leibmedicus."

Seniors.—Schiller, "Maria Stuart"; Riehl, "Culturgeschichtliche Novellen," "Der stumme Ratsherr," "Der Dachs auf Lichtmess," "Der Leibmedicus."

HISTORY AND CURRENT EVENTS.

"As economic pressure and Christian morality have been at the root of political progress in Europe, it is useless to expect that there can be any natural growth of political activity in tropical countries until economic pressure and the idea of free-will take the place of economic ease and the philosophy of fatalism." So the Royal Colonial Institute was informed recently by Mr. Alleyne Ireland, whose studies of administration in the Tropics have given him authority to speak. It reminds us of Prof. Alfred Marshall's *dictum* at the beginning of his manual on economics. The two great forming agencies of the world's history have been the religious and the economic. And if Mr. Ireland's contention is true, the absence of the need for energetic commerce and the nature of tropical religions prevent any "forming" in politics. Will our readers remember Kingsley's description in "Westward Ho" of the sailors who wished to remain in the jungle because they found there all that was necessary for ease, and who were roused out of their slackness by the arrival of a tiger? These are illustrations and even proofs of maxims which should form part of our political science.

THE story of constitutional struggles both in Bohemia and in Hungary should be interesting to Englishmen both for the parallels and the contrasts that may be observed. Have any of our text-book writers ever remarked (*e.g.*) on the fact that but

for Czech struggles in 1618-20 the Thirty Years' War might never have been fought, at least to the involving of all Europe, and that, in that case, Charles I. might have been able to get foreign princes, specially France, to make common cause with him, as Louis XIV. afterwards did with his son? The incident which sets us thinking thus happened last June. The Emperor-King prorogued the Magyar Parliament before the Budget was passed. That body thought the measure unconstitutional, passed resolutions after the King's order was received, and *then* adjourned in conformity to the Royal ordinance. The event is singularly parallel to the scene of which Eliot was the hero in 1629, and which is so dramatically told by Dr. Gardiner in his (large) History of England.

THE situation in the Far East just now resembles, to a certain extent, the position between France and Germany in 1870-1. The Japanese Press points out that "Russia during the past two centuries has learned to regard aggressive expansion as the destiny of her Empire, and her extraordinary freedom from disastrous obstacles has finally engendered the belief in a conquering mission. . . . Therefore, after the lapse of two or three decades, Russia will assuredly obey again the dictates of an ambition now only temporarily checked. Against this contingency full precautions must now be taken . . . by imposing terms, which will constitute an effective guarantee." For "Russia" read "France" in the above sentences, and for "Japan" read "Germany," and our minds revert to Elsass and Strassburg and Courts of "Reunion," to Lothringen-Lorraine and devastated Palatinates. When Germans were asked, in 1871, against whom they were fighting, they replied "Against Louis XIV.," and they secured Elsass-Lothringen and demanded an indemnity. For Elsass-Lothringen read "Manchuria-Korea."

WE report three illustrations of the working of the British Empire: (a) The Federal High Court has decided that the New South Wales Arbitration Court cannot order employers to give preference to members of trade unions. (b) A judicial decision has been given that the Alien Labour Law is beyond the powers of the Dominion Parliament. (c) Mr. Seddon, the New Zealand Premier, said: New Zealand would fight again in a similar emergency to that of the Boer War, but would not let the Mother Country have the sole right of saying what was to be done after the war. Let us arrange these in the political order. The Imperial Parliament sitting at Westminster has given power to a Canadian Parliament and to a New South Wales Parliament. Those powers are limited. Courts are erected by the same authority to watch over the decision of those Parliaments and, if necessary, pronounce on the limits of their powers. They are not, therefore, "sovereign" bodies. They act only under orders. The Imperial Cabinet controls the external and to a large extent the internal policy of the Empire. But this causes sometimes discontent, and there is a desire, as expressed by Mr. Seddon, that the system should change.

The Little Book of Health and Courtesy. Written for Boys and Girls by P. A. Barnett. 24 pp. (Longmans.) 3d.—Parents should read this book. If they do they will decide to present a copy to each of their children. Family gatherings of ten minutes' duration every day, at which the paragraphs of this book were discussed, explained, and amplified, would do a great deal to sweeten life indoors and in public places. There is much in the pamphlet which grown-up persons might take to heart with advantage. How many of us consistently follow Mr. Barnett's concluding maxim: "*Be cheerful and look cheerful!*"

ITEMS OF INTEREST.

GENERAL.

READERS OF THE SCHOOL WORLD will remember that the Academy declined to accept most of the reforms in French spelling proposed by the "commission" appointed by the Minister of Education. The Minister was thus left between the devil and the deep sea. To save himself he has appointed, or induced the *Conseil Supérieur* to appoint, a third commission, which will examine the reports of the two earlier committees and draw up a fresh summary of the evidence laid before it. The members of this third commission are: MM. Brunot, Clairin, Croiset, Emile Faguet, Gasquet, Hémon, Paul Meyer, Rabier. M. Paul Meyer is an ardent reformer, M. Faguet is a moderate, both were *rapporteurs* of their respective commissions. It would be extremely interesting to be present at some of the meetings.

A SUCCESSFUL venture in Paris is worth noticing, for it meets the difficulty of finding suitable accommodation for women students, both of French and of foreign nationality, in the students' quarter. A hostel has been founded under the same roof as the Guild—i.e., at 6, Rue de la Sorbonne, opposite the University buildings. An experienced French lady-superintendent, who holds the *brevet supérieur*, has the management of all the domestic arrangements; she lives entirely with the students, and is at their disposal for assistance and advice respecting studies and other matters. Foreign students are invited to speak as much as possible in the intervals of study, and their mistakes are carefully corrected. Receptions and evening parties are held from time to time at the hostel, and ample opportunities are afforded for visiting—with or without an escort—picture-galleries, theatres, and other places of interest. All residents who are taking the full course at the Guild receive an hour's coaching every day at the hostel in addition to the instruction given at the Guild. For a full scholastic year of nine months, beginning October 1st, the terms vary, with size and position of room, from £54 to £90 per annum. Students may enter for shorter periods, and it is not necessarily required of them that they should attend the full course at the Guild at any time. For admission in October next early application should be made to the Secretary.

TOWARDS the end of June a commercial congress was held in Paris, at which, among other subjects, the organisation of commercial education was discussed. Resolutions were passed that the teachers of modern languages should be given more assistance in the colloquial part of their work and that, for this purpose, young well-educated foreigners should be engaged as assistants. It was further resolved that the organisation of commercial education should be transferred to the Minister of Commerce, that girls should be admitted to the higher schools on the same footing as boys, and be eligible for travelling bursaries. A proposal to equip a vessel and take the graduates of the higher commercial schools for a voyage to the principal ports of the world also found favour. It is intended to found a permanent consultative committee and to hold congresses at future dates. The first one seems to have passed off successfully, but the element of permanency is hardly assured. For the moment, the French are alarmed at the new commercial treaty which binds Germany with her eastern and southern neighbours, and the new departure may have a greater significance in politics than in education.

PARENTS and teachers in this country will be glad to learn of an excellent plan which has been organised with a view of arranging foreign visits for boys and girls more easily than has

been possible hitherto. Prof. Victor Willemin, of Villa Monplaisir, Epinal, Vosges, France, writes to us with reference to the "Bureau Scolaire International pour le Séjour des Enfants et des jeunes Gens à l'Étranger" over which he presides. Parents anxious to arrange economically a visit to France for one or more of their children, and willing during the absence of their own boys and girls to entertain French visitors by way of exchange, should communicate with Prof. Willemin, who will supply full particulars.

CERTAIN of the leaders of the crusade now being preached in France in favour of spelling reform have carried the war into the enemy's country. Under the guidance of M. Clairin, of the Education Council, they have ventured to poke fun at the Dictionary of the Academy. The edition of 1884 has been chosen and certain examples pilloried. ANACHRONISMS: "*Les huissiers de la chambre des Pairs*"; "*Notre chargé d'affaires en Toscane*"; "*Le duché de Savoie.*" OVERSIGHTS: "*Couple, substantif masculin, s'emploie pour désigner deux personnes unies ensemble par amour et mariage.*" As an illustration of this definition, M. Clairin quotes from the Dictionary: "*Gober un couple d'œufs frais,*" and wonders how eggs can be united by love or marriage. "*On dit l'écaille et non la coquille d'une huître,*" but an oyster is defined as: "*un mollusque à coquille.*" Finally, "*Dromadaire, espèce de chameau qui a une seule bosse sur le dos.*" Ex.: "*Les DEUX bosses d'un dromadaire.*" "*Chameau, quadrupède qui a deux bosses.*" Ex.: "*La bosse d'un chameau,*" &c.

THE Departmental Committee on the Royal College of Science and Royal School of Mines has issued a Preliminary Report. The Committee says that it would be prepared to submit recommendations which would conduce to increase the great usefulness of these institutions, even though conducted in the main upon their present lines. In view, however, of the urgent national necessity for increased facilities for advanced instruction and research in science, and of certain munificent offers of aid towards the provision of such facilities in London, the time seems opportune for a comprehensive scheme, involving the co-operation of certain influential scientific institutions and the realisation of the offers of aid referred to. The success of the scheme outlined would necessitate, amongst other things, the gift of a capital sum of not less than £100,000, of an additional site at South Kensington, the willingness of the Board of Education and of the City and Guilds of London Institute to amalgamate their colleges at South Kensington, and the continuance of certain Government and other financial support.

THE main feature of the scheme is the establishment of a centre in which the specialisation of the various branches of study and the equipment for the most advanced training and research will be such as ultimately to make it the chief technical college of the Empire. This college will naturally be in South Kensington, where, in the two institutions referred to, there is already accommodation for nearly 1,000 students. A fully developed School of Mining and Metallurgy is to be provided for, with departments for the principal branches of engineering and for other special subjects. The Royal College of Science and the Central Technical College will form the nucleus of the proposed undertaking. The educational and financial administration of the Central College could not, naturally, be vested entirely in the Government; the point emphasised is the necessity for the disinterested co-operation of several independent bodies. Replying to the Committee on two specific points, the Board of Education stated its willingness to allow the Royal College of Science to be used as suggested by the Committee, and promised to consider the question of adequate (and, therefore, increased) financial support. The Government has

decided since to allocate £20,000 a year to the new College of Technology at South Kensington out of the Treasury subsidy for the maintenance of the Royal College of Science and the School of Mines, and an intimation to this effect has been made by the Chancellor of the Exchequer to Mr. Haldane, the chairman of the departmental committee.

AN extraordinary general meeting of the Association of Assistant-mistresses was held at the College of Preceptors on July 1st to discuss the proposals for a college of secondary school teachers. The feeling of the meeting was strongly in favour of federation in some form. The following were among the resolutions passed:—(i.) That the Association of Assistant-mistresses approves in principle of a Federation of Associations of Secondary Teachers. (ii.) That the Association of Assistant-mistresses is willing to join the proposed college, provided that conditions satisfactory to the Committee of the Association of Assistant-mistresses are obtained. (iii.) That the Association of Assistant-mistresses would accept, as academic qualification for future members of such a college, examinations of the standard of those which now admit to membership of the College of Preceptors. The secretary reported the proceedings of the conference on salaries in London secondary schools held on the initiative of the London branch of the Assistant-masters' Association. The conference sent a deputation to the Higher Education Subcommittee of the London County Council, and recommended that a qualified woman teacher in a secondary school should receive an initial salary of not less than £120, rising to at least £200.

AT the Congregation of Birmingham University which took place on July 8th, Sir Oliver Lodge made a brief statement with regard to certain new directions in which the University has advanced. There are two directions in which the University has acted as a pioneer—it was the first to confer degrees in dentistry and in commerce. They are now being imitated by other universities. This year has seen the opening of a new and very highly-equipped dental hospital. This year will see the presentation of the first graduates in commerce which have ever been presented in any university in the world. He took the opportunity of saying that the faculty of commerce has received high encomiums from those who came into contact with it in their official capacity as external examiners, and so were competent to judge. The University has not yet conferred any honorary degrees. The establishment of a Chair of Music has aroused world-wide interest, and the appointment thereto of Sir Edward Elgar has only enhanced that interest. The Chair of Engineering, so long held by Prof. Burstall, is now split up into three in recognition of the magnitude and importance of the subject. In addition to the Chair of Mechanical Engineering there will be Chairs of Civil and Electrical Engineering, the latter of which bids fair to be of the utmost importance in the future.

ON the same day honorary degrees were conferred at Manchester University. The honorary degree of Doctor of Laws was conferred upon Dr. Butler, President of the Columbia University. In expressing his appreciation of the honour of enrolment as a member of the vigorous and progressive Manchester University, Dr. Butler said the urban University of the type to which the Manchester University belonged is a new creation. It came into existence with the growth of modern city populations. Nowhere is a university more necessary or valuable than in the centre of a vastly populated area, and such a university should have chiefly two great aims to serve. The first is to keep alive the fires of scholarship, and to make plain that this vast material expansion adds to the value of the old truths and the controlling ideals which have lifted mankind out of barbarism to the civilisation of which we are so justly proud.

Next, the function of an urban university is to show the urban community, and those who are dependent upon it, how their interests, their health, their growth, their education and their prosperity may best be increased and furthered by the application of scientific truth and methods to the needs of the moment.

THE honorary secretary of the League of the Empire informs us that Sir Richard Jebb, chairman of the Federal Council of the League, in response to the desire of the committee has given the subjects for the Essay Competition for Empire Day, 1906. The subject chosen for the inter-secondary school competition is intended to call out thought; that for primary schools is a straightforward subject of a historical kind, which is easy whilst it is calculated to test both the intelligence and method of the pupils. The following are the conditions and subjects: (a) a Silver Challenge Cup, value £10 10s., presented by the Earl of Meath, to be held by the School, and a personal prize of £5 5s., given by the League of the Empire, is offered for competition, among secondary schools of the Empire, for an Empire Day Essay of not more than 2,000 words on "The Ideas expressed by the word 'Empire'"; (b) a Silver Challenge Cup, value £10 10s., presented by the Earl of Meath, and a personal prize of £3 3s., given by the League of the Empire, is offered for competition, among primary schools of the Empire, for an Empire Day Essay of not more than 1,000 words on "The Chief Stages in the Growth of Greater Britain."

SPEAKING at the jubilee celebration of Epsom College, Lord Rosebery said: "I am sometimes puzzled by one very curious anomaly in this country. We have the best raw material in the world. We turn out annually thousands of young fellows, splendid in physique, not ill-trained intellectually as compared with other nations—the most valuable body that a nation can have. In an Empire like ours there should be an unlimited demand for such men. There is practically an unlimited need for such men; and yet why is it that the demand and supply in this matter do not coincide? You never sit next to parents at dinner who know the least in the world what they are going to do with their sons. That is the great problem of the age. I myself, as a parent, can speak with the utmost sympathy of the difficulty that exists of finding proper avenues of employment for one's sons. Some find it in the cricket field and some elsewhere; but I am conscious that there is, for almost all the young men of whom I am speaking who are turned out by the public schools, a round hole somewhere in the Empire if they can find it. And that is the eternal difficulty which must be solved some day by some statesman, some legislator, or some educationist—the difficulty of finding some adaptation of the peg for the hole throughout the Empire." We rather fancy that Lord Rosebery was nearer the truth in speaking of this difficulty as "eternal" than when he stated it would some day be solved.

LORD JAMES OF HEREFORD, in an address at the Cheltenham College Speech Day, said: "In my boyhood days one of the principal weapons of tuition was punishment, but instructors of the youth now recognise that it is better to appeal to a boy's honour than to appeal to force. Sixty years have also witnessed momentous changes in the methods by which the youth of our land can take part in the administration of its affairs. Formerly the only means of access to political life or public service were wealth or the personal influence of friends. The progress of democratic life and thought, however, has been so great that at the present time wealth is of no value and influence is often worse than useless, and it is only by sheer ability and intellectual force and integrity of life and character that men can win their way amongst their fellow-citizens to positions which give them power in the State. This being the case, the weapon by

which you must fight your way is in your own hands. If rewards now come only to the worthy and the meritorious, you must seek to make yourselves worthy and meritorious, and it is only by making the best possible use of the opportunities of school days that you can hope to do this."

THE recently published census returns dealing with the education of the people of Cape Colony are instructive reading. The percentage of the people able to read and write is taken as a criterion of the stages of education reached by the different races, and it is noted that 75 per cent. of the Europeans, 20 per cent. of the Malays, 15 per cent. of the Fingoes, 6 per cent. of the Hottentots, 5 per cent. of the Kaffirs and Bechuanas, and 26 per cent. of the total population of the Colony are able to read and write. If, instead of taking persons of all ages, children up to the age of fourteen alone are dealt with, the percentages are as follows: Europeans, 39; Malays, 15; Fingoes, 9; Hottentots, 4; Kaffirs and Bechuanas, 3; all races, 13.

A NEW Education Bill for Cape Colony has been passed by the House of Assembly. Every portion of the Colony is to be included in a school district, under the jurisdiction of a Board, consisting of six, nine, twelve, fifteen or eighteen members, elected for three years. These School Boards will, at the end of three years, have become responsible for the management of all public undenominational schools, though new school committees elected by the parents may manage any school under the control of a School Board. The appointment and dismissal of any teacher are to be subject to the approval of the Education Department. Provision is made for the establishment of schools for children of non-European extraction. For children of European extraction attendance is to be compulsory; also, in certain circumstances, for other children. If there is any excess of the expenditure over the income of any School Board, half the excess is to be paid by the Department, and half is to be raised by the levying of a special local rate. With regard to religious instruction the Bill contains the following clause: "Every School Committee or, where there is no Committee, the School Board shall make provision that the school under its control is opened daily with the Lord's Prayer and with the reading of a portion of the Bible, provided that no child attending such a school shall be required to be present when this is done if the parent or guardian expresses a wish to the contrary, and provided further that the procedure for the opening of schools as laid down in this section shall not be incumbent upon schools of non-Christian designation."

FROM the report of the United States Commissioner of Education, 1903, we learn that the question of seats for the children has received special attention. One great city has spent hundreds of thousands of dollars in an adjustable seat—a seat so constructed that the seat and desk can be raised or lowered according to the physical requirements of the pupil. In view of the fact, however, that ninety per cent. of the children can be accommodated safely and healthfully in an ordinary seat, this seems an unnecessary expenditure, and we are not surprised to learn that it is regarded as an extremist development.

SOME ten years ago, the experiment was inaugurated of the free transportation of rural school-children in several of the States to the public school in the district. The average number attending such a rural school—a one-room building—worked out at about thirty, of all ages. Experience has now shown that it is more economical, and more beneficial to the children's education, to erect a central, commodious, and complete building. Omnibuses carry the children to and from the school daily. The salary of the teacher, in the old, small, rural school, added to the cost of the maintenance of the building, exceeds the cost

of transportation to a central school. Homes situated four miles from the school house are accommodated at a decreased expense, increased efficiency, and better schooling for the children.

MR. P. J. HARTOG has an interesting article on Universities, Schools and Examinations in the July number of *The University Review*. The chief object of his article is to draw the attention of University teachers (1) to the fact, well known to specialists, that our secondary instruction is deplorably behind secondary education abroad, and (2) to the consequence, that if the University teachers wish to improve University education as a whole they must use every effort as individuals and as members of a University to improve secondary education. Sir Oliver Lodge's "Old English Degree of B.A." should be taken whilst the student is still at school, and not by men at the Universities. Two reasons are given for the intellectual deficiencies of our secondary education, viz., the incompetency of the majority of teachers, and the character of present-day examinations, especially with regard to the low minimum of marks necessary for a pass—thus allowing an incompetent person to gain a certificate of competency. Whereas between the ages of 18 and 22 a student ought to be working to please and satisfy his own mental requirements and critical power, the whole tendency of present-day English secondary and University education is to make the student work to please other people. His original faculties have no free play.

THE Rev. Arthur Chilton, Headmaster of Emanuel School, Wandsworth Common, London, has been appointed headmaster of the City of London School.

SCOTTISH.

SIR HENRY CRAIK presented the prizes at the "Founder's Day" celebrations in connection with Fettes College. Dr. Heard, the headmaster, in introducing Sir Henry, said that his name will always be associated with the leaving certificate which has done so much to stimulate education in Scotland. The certificate has this unique characteristic, that it is not so much an examination of individuals as an educative and formative power for education generally. It is no parade ground for clever boys, but rather an efficiency test for schools and departments of schools. Sir Henry Craik, in reply, paid a well-merited tribute to the great place Fettes occupied in the national system of education. He referred to the recent lecture by Prof. Ray Lankester, in which he contended that the classical and historical scheme of education should be abandoned in favour of "an education in nature as set forth in physics, chemistry, geology, and biology." Much as he valued nature knowledge and science generally, nothing, he thought, could be more pernicious from an educational point of view than an exclusive diet of these courses. No education is worthy of the name, or will tend to produce good citizens and worthy men, if it excludes from its purview the best thoughts and the best utterances of the best minds of the past.

A PARLIAMENTARY paper has just been issued showing the extent to which local authorities in Scotland have allocated and applied funds to the purposes of technical education during the year 1904-5. The total amount of the residue grant paid to the county councils and town councils of burghs was £72,970, of which £54,090 was allocated to technical education, and £18,880 was devoted to the relief of rates. An examination of the figures shows that 24 out of the 33 county councils applied the whole of the grant to technical education, while the remain-

ing 9 applied part of it to that purpose. Of the 205 burghs, 52 applied the whole, and 77 a part of the residue grant to technical education, while no fewer than 76 devoted the whole grant to the relief of rates.

A DEPUTATION representative of the school boards of the four large cities—Edinburgh, Glasgow, Aberdeen, and Dundee—waited upon the Marquis of Linlithgow, Secretary for Scotland, in order to press upon the Government the urgent necessity of passing the Education Bill this session. Mr. R. S. Allan, Chairman of the Glasgow School Board, who was the chief speaker, said that educational effort in every direction has been paralysed for the past eighteen months owing to the apparent imminence of the great changes that will be effected by the Bill. It is impossible to administer educational affairs efficiently, and still less to develop an educational policy, when school boards feel themselves in a state of suspended animation. Much as they wish to see the Bill amended in certain directions, they would accept it as it stood rather than delay for another year and have to face another school board election under the present conditions. The Marquis of Linlithgow, in the course of a sympathetic reply, said that it was the intention of the Government to pass the Bill this session, and he would use all his influence to facilitate its passage through the House of Commons. But after all, this is a matter that does not depend entirely on the Government, and he urged the members of the deputation to use their influence with Members of Parliament to reduce the amendments to the narrowest possible limits. If this is done, he thinks he can promise them a safe passage for the Bill.

THE Secretary for Scotland thereafter received a deputation representing the endowed schools of Scotland. Mr. John Harrison, Master of the Edinburgh Merchant Company, said that they all heartily desired to see the Bill become law this session, and the amendments which they wished to bring before his lordship were such as would commend themselves to all who were aware of the debt Scotland owed to her endowed schools. The proposed amendments were generally in the direction of safeguarding the position of the endowed schools against capricious interference or unnecessary competition at the hands of the new education authorities. Prof. Ramsay, Glasgow, in supporting the amendment, said that the endowed schools of Scotland were the life blood of the universities. The Secretary for Scotland said in reply that he was well aware of the great part played by the endowed schools in the history of Scottish education. He assured the members of the deputation that he would give the most careful consideration to their suggestions, with the great majority of which he was in entire agreement. He urged them to use their best endeavours with Members of Parliament to try to reduce the enormous number of amendments which stand against the Education Bill.

THE Convention of Royal Burghs has forwarded to the Secretary for Scotland a statement in support of the amendments it desires made in the Education (Scotland) Bill. A strong feeling, it is stated, has been expressed in the Convention against the unfairness which would be caused by the lack of a provision in the Bill to meet the case of those burghs that have valuable educational endowments, or give contributions for educational purposes from the common fund. According to the present Bill, these contributions must be thrown into the common funds, and no benefit will accrue to the ratepayers of the burghs making these contributions. The Convention also objects to the withdrawal of any part of the equivalent grant, and it submits that even the residue grant ought not to be withdrawn unless as part of an arrangement under which there

would be secured to the burgh and county authorities a fixed grant in lieu thereof. The Convention further urges that the school rate should be levied on the public health or gross valuation basis, rather than on the poor-law basis of assessment.

THE committee stage of the Education (Scotland) Bill witnessed an extraordinary *volte face* on the part of the majority of the Opposition. The attitude of friendly criticism which has hitherto been their rôle was exchanged for the most uncompromising hostility. The very principle of the Bill (the enlargement of areas), which one would have thought secured by the unopposed second reading, was fiercely assailed by Sir H. Campbell-Bannerman and his supporters, and the greater part of the sitting was taken up by consideration of an amendment to make the parish the unit of area for elementary education. It must be admitted that the supporters of the Government gave them a lead which they were not slow to follow by contending for the "county" rather than the "county district" as the school board area. Between these two sections it looks as if the Bill had been effectually killed, though the withdrawal of the redistribution resolutions will set free an amount of parliamentary time that might easily suffice to pass this all-important measure. To do this, however, two conditions would have to be fulfilled. The Government must be in earnest in their efforts to carry the Bill, and the Opposition must confine their criticism within fair and reasonable limits. At the moment of writing it looks as if neither condition was likely to be fulfilled, and the probability is that for the second time the Education Bill will be sacrificed on the altar of parliamentary inefficiency.

THE interesting experiment, so successfully initiated last year, of camp training for Glasgow cadets is to be continued this year on an extended scale. About 200 boys, representing the leading secondary schools, are to proceed to Barry for a week's training. As the War Office makes no allowance for the equipment of cadet camps, the present venture would be impossible were it not that Colonel R. C. Mackenzie, 1st V.B.H.L.I., has placed at their disposal most valuable plant in the shape of tents and cooking utensils. Corporate school life, so valuable an instrument in the formation of character, has always been a weak element in our Scottish schools. The cadet corps offers an ideal opportunity for strengthening the schools on this side, and as their formation has been urged both by the War Office and the Education Department, it is to be hoped that some arrangement will speedily be made between these departments whereby grants will be made available to meet the heavy expenses connected with the upkeep of such corps.

SIR HENRY CRAIK, K.C.B., speaking at the closing of Perth Academy, said that the great problem of Scottish education was at this moment at a critical stage. It was idle to hide from themselves the fact that the Education Bill, the need of which everyone recognised, was by no means assured of passing during the present session. The advance all over England in secondary and technical education under the stimulus of the English Education Act has been enormous, and he was certain equally satisfactory progress would result from the passing of the Scottish measure. Those who did anything at the present time to prevent the passing of the Bill would be taking upon themselves a grave responsibility for which at no distant date the country would call them to account.

IRISH.

THE Consultative Committee for Co-ordinating Educational Administration met towards the end of June at the offices of the Department of Agriculture and Technical Instruction, the Vice-

President of the Department, Sir Horace Plunkett, being in the chair. The Intermediate Board was represented by Rev. T. A. Finlay, S.J., Technical Instruction by Mr. W. R. J. Molloy and Mr. Geo. Fletcher, the National Board by the Resident Commissioner, Mr. W. J. M. Starkie, and the Agricultural Board by Mr. T. P. Gill. The committee had under consideration arrangements regarding the co-ordination of the National Education Board's programme for evening schools with the Department's regulations for the administration of science and art grants to schools other than day secondary schools.

THE Board of Trinity College has again this July conferred honorary doctor's degrees on three women. Mrs. Byers, of Victoria College, Belfast, and Miss H. White, of Alexandra College, Dublin, have received the LL.D. degree, and the Hon. Emily Lawless the Litt.D.

A REJOINER has been made to the new exhibitions to be awarded by Trinity College on the result of the Intermediate examinations, in the determination of the Catholic Bishops of Ireland, at their meeting at Maynooth in June, to establish a scholarship fund for Catholic students entering the Royal University. The scholarships are to be tenable at University College, Dublin, or, in the case of girls, at the Dominican College, Eccles Street, or at Loreto College, Stephen's Green. The award will be made early in October of each year, on the basis of the published results of the Intermediate examinations, by a committee of which His Grace Dr. Walsh, the Archbishop of Dublin, will act as chairman, and Very Rev. Wm. Delany, S.J., the President of University College, as Hon. Secretary. The Bishops have guaranteed £1,000 a year for 20 years as a nucleus for the fund, and appeal to private individuals to augment it. The first of the awards will be made next October, when eight scholarships of £50 a year, and four scholarships of £25 a year each for three years will be awarded. Candidates are invited to send their names to the secretary on or before the 1st of October.

THE meeting at Maynooth was also memorable for an interesting and remarkable discussion on the university question. Cardinal Logue, who presided, expressed his disapproval of Father Finlay's scheme for collecting the money to support a university from the Irish people, on the ground that they had done it once before and the money had been wasted through the refusal of a charter, while the country had become poorer since that date. His idea was that the Treasury should give some of the millions which Ireland had paid in over-taxation. Dr. Delany controverted this position. The money collected before had been only £210,000, for which they had to show the finest medical school in Ireland, and University College, whose successes far surpassed those of the Queen's Colleges. If 300,000 families annually subscribed only 6d. each, they would realise £7,500; and if 600,000 subscribed 1s., £30,000. Dr. Kelly, the Bishop of Ross, suggested an attack on the funds of Trinity College; while Dr. Macdonald, who expressed his belief that the advent of the Liberals to office would bring no improvement in their prospects, thought they should attack Trinity by sending their children there. He did not believe their faith would suffer, and thought it was the duty of Irish Catholics to suggest a programme for reforming Trinity and converting it into a National university.

THE Association of Catholic Headmasters has made a number of suggestions to the Intermediate Board on its rules and programme. The most important are: to shorten or modify the programme of theory of music and to give a certificate of passing in music independent of whether the student passes the intermediate examination as a whole; to separate arithmetic and algebra in all the grades; to omit the group declaration for pass

students; to ask for the establishment of an approximate proportion between honour passes and the total number of passes in the various subjects; to suggest a method for improving the correction of the papers; to recommend special text-books for history and geography; to urge a fairer method of awarding exhibitions; and to request the Board to retain in its own hands discretion in the matter of exemption from science. The members of the Consultative Committee are asked to make out lists of authors suitable for the several grades of the various languages and of text-books where desirable. The Association desires the publication of the exhibition and prize lists in pamphlet form with examination numbers and marks but without names or schools. It wishes Irish to be put on a level with French and German throughout, and Latin to be allowed as an alternative to French or German in the science course. It objects to prescribed books for English composition in the higher grades, wishes English grammar and analysis to be added in the preparatory and junior, and history of literature in the middle and senior grades, and desires elementary trigonometry to be introduced in the middle grade.

THE annual conference of the technical committees met this year in Limerick. The address of the president gave as reasons for the difficulty of providing advanced technical instruction, especially in the smaller districts, the unpreparedness of the average student who comes to a technical school some years after leaving the primary school, and having in the meantime forgotten much of what he learnt there, and the indifference of employers to education. The evening continuation schools were not as much used as they should be, but this was partly due to the restrictive regulations of the National Board, which should be modified. Resolutions asked for an increase in the technical grant, co-ordination in primary, intermediate, and technical schools, the establishing of scholarships for teachers of trades, urged employers to grant facilities for attendance at technical schools, and pressed upon the department the necessity for a scheme of travelling scholarships in art, science, and technological subjects.

MESSRS. DALE AND STEPHENS, who were appointed by the Lord Lieutenant to inquire into the condition of intermediate schools in Ireland last year, have presented their report. It is in four sections: (1) the co-ordination of intermediate with other grades of education; (2) the premises and staffing of intermediate schools; (3) the allocation of the funds of the Intermediate Board; and (4) the teachers of the intermediate schools. The report is one of the most important ever published on Irish education.

WELSH.

THE Prince of Wales—the Chancellor of the University of Wales—has laid the foundation stone of the new buildings of the University College of South Wales and Monmouthshire, at Cardiff. The new building is to be in Cathay Park. All the proceedings were a great success, and a happy augury for the future of the great undertaking. There was a brilliant assembly of representatives of all ranks of Welsh life, academic and lay, including teachers and elder scholars from the secondary and elementary schools, and twenty boys from the University Settlement. A congregation of the university was held the same day, and the following received degrees at the hands of the Chancellor: Mr. J. Gwenogfryn Evans, D.Litt.; Prof. Henry James, D.Litt.; Sir John Williams, D.Sc.; Lord Tredegar, LL.D.; and the Rt. Hon. Joseph Chamberlain, LL.D.

THE University College of North Wales, Bangor, has celebrated its coming of age. The Mayor of Bangor handed over to the President of the College, Lord Kenyon, the deed of gift for the new college site, a noble gift from the town to the

college. Principal Reichel made most appropriate recognition of the services rendered to the college by Mr. William Kathbone, Mr. R. A. Jones, Dr. Gray, Dr. Dobbie, Prof. Rhys Roberts, Prof. Mathews, and Prof. Henry Jones, of whom his pupils said, he "set ideas on fire." Amongst the speakers were Sir Isambard Owen, Mr. Lloyd-George, and Prof. Henry James. The last-named spoke strongly on the necessity of great teachers and investigators, and for these it is necessary that a college should be autonomous, and not even be subjected to the centralised influence of a federal university. He hoped to see the Bangor College made into a separate university. This is not the first time the suggestion has been made that Aberystwyth, Bangor and Cardiff should follow the example of Manchester, Liverpool, and Leeds.

THE Glamorganshire Education Committee refused to recognise the re-appointment of a lady as headmistress of a Briton Ferry non-provided school, as made by the managers. The Board of Education considered the objection urged to the appointment by the committee was invalid, being founded upon grounds other than educational. The committee then required that it be ascertained if the headmistress could teach Welsh. It was found that she could not. It was then decided that the lady be not re-appointed.

THE Glamorganshire Education Committee have drawn up the following regulations with regard to punishments in the elementary schools: "It is desirable that teachers should try to reduce punishments to a minimum. Corporal punishment should be resorted to only where other methods have failed, excepting in cases of most serious offences. In each department corporal punishment may be inflicted by the head teacher only, except in departments exceeding 100 in average attendance, where the head may delegate the power to one assistant holding a parchment certificate whom he selects for the purpose, the punishment to be recorded in a book provided for that purpose. With regard to girls and infants this method of punishment ought in practice to be dispensed with. In cases where it is found necessary to detain children after the ordinary school hours for the purpose of discipline or punishment, the period of detention should not exceed fifteen minutes in the morning and thirty minutes in the afternoon. The time of detention should be spent under the immediate supervision of a responsible teacher. Children must on no account be detained or otherwise punished for dulness."

THE decision of the Court of the University of Wales at its adjourned meeting at Shrewsbury with regard to the administration of the University was as follows: "That in order to admit of further consideration by the Court of the question of the desirability or undesirability of a salaried head of the University, (1) the University grant the present Registrar a retiring pension of £200 a year; (2) a Registrar with academic qualifications be forthwith appointed at a salary of £500 a year."

AT Swansea the Church leaders have decided to proceed to canvass the town for £10,000, the sum estimated for putting the non-provided schools into a sound state.

THE first "revolting school" has been opened in Wales. The Nonconformists of Llandecwyn agreed to do all in their power to withdraw the children of Nonconformist parents from the Llandecwyn National School to the Brondecwyn Wesleyan Chapel. It is reported that the school only had twelve names, of which nine were Nonconformists. It is stated that the new school started with seventeen pupils, of whom one only came from the Llandecwyn National School. It is further stated that the latter school had five only in attendance on the day the emergency school started.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

H. Zschokke, Der Zerbrochene Krug. Edited by H. C. Sanborn. xvi. + 76 pp. (Ginn.) 1s.—The introduction, giving the main facts of Zschokke's life, is fairly well written; only occasionally are we treated to grand phraseology—e.g., "The momentum of the myriad minor details of everyday life are [sic] most essential in estimating the force of character of men of his stamp." When will American editors learn the charm of simplicity? The text of the well-known tale, suitable for private or cursory reading rather than for detailed study in class, is well printed; the notes are not above the average. The vocabulary is practically complete.

Material for Practical German Conversation. By L. Fossler. xi. + 255 pp. (Ginn.) 3s.—It is hard to tell who in England will be benefited by the publication of this American book. The tone of the conversations renders them quite unsuitable for school work. Our teachers do not encourage their pupils to call them "You wicked man!" (p. 14), nor do we usually address our pupils as "Meine Herrschaften!" Possibly the book might be used in evening classes. The private student may peruse the book with advantage to his vocabulary, and the author has taken a good deal of trouble over the annotations.

Hossfeld's Advanced German Reader. By D. Thieme. xiii. + 493 pp. (Hirschfeld.) 3s. net.—This is a very useful selection of passages in prose and verse from the classics and from authors of the nineteenth century. The text is not free from misprints, and the notes contain a good deal that is quite superfluous and some questionable renderings into English. The biographical notes are also not uniformly satisfactory; thus Schiller is said to have "received his education at the *Karlschule*, a military college in Stuttgart." On the whole, however, the book may be recommended.

Goethe, Die Geschwister. Edited by L. Hirsch. 32 pp. (Blackie.) 6d.—This short play is little known and may be recommended for private reading; it is hardly suitable for use in class. The editorial work has been carefully done, and the printing is very good.

German Exercises. By H. S. Atkins. 83 pp. (Blackie.) 1s.—These exercises have been written to accompany the same author's "Skeleton Grammar." They consist of passages for translation from and into French, and have mostly been specially prepared, with the exception of poems such as *die Lorelei*. The English passages are written to suggest the German word order, sometimes with curious results. It may well be doubted whether it is wise to put before our pupils such sentences as: "He is quite quiet while I work, but when I him call, and we for a walk go, barks he for joy," or, "At what o'clock did you say that you on Monday come would?" This principle is not even consistently followed; thus, on p. 17 we read: "When I came home." The German text is not free from doubtful expressions, and there are misprints. The vocabulary may not have been intended to be complete.

Der Sprachunterricht muss umkehren! Von Quousque tandem. (Wilhelm Vietor.) viii. + 52 pp. (Reisland.) 1s.—The third edition of the famous pamphlet of 1882 has just been issued, this time with the addition of notes, bringing it up to date. We welcome this reprint most heartily, and offer our sincere thanks to the pioneer of the reform. May he long continue to influence for good the teaching of modern languages!

Classics.

Matthew Arnold on Translating Homer. With Introduction and Notes by Dr. W. H. D. Rouse. (Murray.) 3s. 6d.—In the present crusade against dull methods in classical teaching, the most noteworthy feature perhaps is the attempt to stimulate literary interest. Thus we notice that, in selecting matter for fresh reading-books, editors are making shift to do without absolute Attic Greek provided only they can secure full and interesting pictures of Hellenic life. In the same way it was a happy thought to add to the resources of a sixth-form teacher by editing, with introduction and notes, "Matthew Arnold's Essay on Translating Homer." In this volume a boy will find set forth the first principles of translation from classical languages in a manner which he is not likely to forget, in the phrases of critics from Longinus to Matthew Arnold. Dr. Rouse's introductory essay is a valuable piece of work, characterised by breadth and grip. It is clearly written; *nilhil quod tangit non illuminat*. It fills up many a gap in Arnold's treatment of his theme. From Longinus and others light is thrown on the question how Homer appeared to the Greeks, a point necessary to settle if we are to determine the measure of remove of the style in which Homer should be translated from modern English. After estimating the amount of success attained by various translators of Homer in prose and verse, and setting up a reasonable standard for future aspirants, Dr. Rouse argues that we may hope for an English style at once noble and simple to do justice to Homer, but that the real difficulty is the verse. He himself inclines to share Matthew Arnold's faith in the future of the English hexameter; and certainly some specimens he offers, in which quantity coinciding with accent is carefully observed, and the final cadence is a dactyl in the fourth foot followed by accented trochees or spondees in the fifth and sixth, read pleasantly enough to create the hope that some accomplished writer of English hexameters may yet do Homer justice in his own metre.

Eutropi Breviarium. Edited by W. H. S. Jones. (Blackie's Latin Texts.) 8d.—This is the first of a new series of Latin texts. The main features of the series are: uniformity of spelling according to the best that is known, consistent marking of vowels long by nature, absence of explanatory notes, the addition of a few simple critical notes, and a brief account of the author, his works, and style. This volume is a very good start for the series. The text is well printed. As far as we have tested it, the spelling is sound, and the marking of quantities correct. It is true there are a few omissions of quantity marks (e.g., p. 61, *ultra*; p. 86, *molitus, rerum*, where long vowels are not marked), but it is almost a physical impossibility that there should not be slips of this kind. Messrs. Blackie will be asked, we think, to include special vocabularies in these volumes, as schools will insist on having them, in spite of the better training to be got by using a good dictionary. We have one doubt only about this series, and that is as to the textual notes and textual introduction. Here, for example, are five pages of textual introduction—well enough by way of putting the editor straight with textual critics, but surely calculated to take away a part of a mere boy's rather meagre store of interest from the main point, namely, the text. The same with the textual footnotes, which seem to require the editor's excuse: "The discussion of an interesting reading may also impress a grammatical rule firmly in the pupil's mind."

Murray's Handy Classical Maps. *Mare Ægæum*, etc. 1s. net.—Too much has been attempted in this map. It includes a small map of the Ægean Sea with coastline, the Propontis, the Piræus, Athens, Acropolis, Egypt, Rome during the Republic, Roma Quadrata, Modern and Ancient

Rome, Forum Romanum, and Rome under the Emperors. The plans are useful, and the Propontis is good to have on a scale large enough to see the places; but if the Black Sea had been substituted for the Ægean, and a large map of the Ægean given alone, these would have been far more useful. The Ægean is too small to be of real use. If Mr. Murray does bring out a separate map of this area, we hope he will include Thrace and Sythia and as much of Asia Minor as possible with Cyprus. One of the most useful maps we know is that of the Greek Islands, published by Kiepert, for use in Greece, which includes the districts named, except Asia Minor and Cyprus.

Corpus Poetarum Latinarum, a se aliisque denuo recognitum et brevi lectionum varietate instructum. Edidit Johannes Percival Postgate. Fasc. V. quo continentur Martialis, Juvenalis, Nemesianus. x. + 140 pp. (Bell.) 6s. net.—We welcome this last instalment of the second volume of Dr. Postgate's *Corpus*. It is a great work, and ably done, a credit to English scholarship. Dr. Postgate has generally been fortunate in his editors. He is so in this volume. Mr. Duff is the editor of a school Juvenal, unpretending, but done in a sound, workmanlike fashion, which is seen again in his Martial. Mr. Housman, although not the most patient of critics, is a very capable editor, one who bases his judgment on an exceptionally wide knowledge of Latin and Latin manuscripts, and is, above all things, original and independent. The little pieces of Nemesianus are edited by H. Shenkl and Dr. Postgate himself. The general character of this part is the same as the rest of the work, and needs no comment from us. Postgate's *Corpus* has already established itself as a standard work. It should be in every school library and in the hands of all serious scholars.

We are glad to welcome a second edition of *Classical Archaeology in Schools*, by Dr. Percy Gardner, with an appendix containing lists of archæological apparatus by P. Gardner and J. L. Myres. (Oxford: Clarendon Press; 30 pp., 1s. net.)—This is a most useful pamphlet, which should be in the hands of every classical teacher. But why is not the English Photographic Company of Athens mentioned? They have a far larger collection of photographs than Rhomaidhes, and quite as good; often better.

A Grammar of Greek Art. By Dr. Percy Gardner. xii. + 267 pp. (Macmillan.) 7s. 6d.—This is a useful manual. It deals so with the principles of Greek art that the young student may understand its conditions. Greek art cannot be understood apart from its history, and allowance must always be made for the limitations within which the artist worked, dependent partly on tradition, and partly on the material he used, and the purpose for which his work was intended. Thus in vase-painting, the relation of the picture to the shape of the vase has to be considered, and to the space allotted for it; the conventions of scheme must be taken into account, the decorative character of the painting, the absence of perspective, and so forth. In sculpture, it must be remembered that reliefs or round carvings were intended to form part of the ornament of a building, and they took their character from that fact. The principles of interpretation have also to be understood: how places or deities were personified, how far symbolism was used, how the different scenes in a story could be represented. Other fruitful subjects for discussion are the relations of art to poetry and the drama, the question whether literature had influence on art, or well-known works, such as those of Phidias or Polygnotus, upon the humbler craftsmen who made painted vases or struck coins. It appears from this examination that the intellectual interest was supreme over the sentimental in all good Greek art; and the noble qualities of self-control and perfection within prescribed limits pervade the whole of it. We can recommend the book to

all who have to do with Greek teaching; it is suggestive, thoughtful, and illuminating.

The Peace of Aristophanes. Edited with Introduction, Critical Notes, and Commentary by H. Sharpley. ix. + 188 pp. (Blackwood.)—Although this is not among the "epoch-making" books, it is a very scholarly and careful edition, which will do much to facilitate the study of this amusing play. The introduction includes a discussion of the question whether there was a second edition of the play, an account of the scenic arrangements, and a careful analysis of the manuscript evidence. The first question Mr. Sharpley leaves undecided. He points out that the only evidence for a second edition are the Third Argument and an allusion ascribed to Crates; but that these cannot be lightly dismissed. His account of the scenic machinery is sensible and lucid; but we cannot agree with him in believing that the evidence of the play supports Dörpfeld's theory of the Greek stage. Mr. Sharpley has carefully studied the structure of the theatre, and has some interesting comments upon it. His examination of MSS. leads him to the belief that "V was copied from an MS. which was closely related to the archetype of R, but which either itself or in its original had been contaminated with, or interpreted from, an MS. of a different family from any which we possess." The commentary is distinctly good. Mr. Sharpley shows that he has studied the Attic inscriptions. His illustrations are to the point; we wish there were more of them; his translations are apt and idiomatic. Most scholars will differ from Mr. Sharpley now and then; but he has always good reasons for his views.

English.

The Sayings of Muhammad. By Abdullah al Mamanual Suhrawardy. xxxii. + 131 pp. (Constable.) 2s. 6d.—This book is of great interest and value. At the present time it comes in to supplement Mr. Stanley Lane-Poole's volume in the "Golden Treasury" series, and it presents a sufficiently remarkable view of the philosophy (so to call it) of the great Prophet of Islam to make it worthy of a place among those volumes of the wisdom literature of the world which many people are glad to possess as private treasures. There are a really fine sketch of Muhammad and a sort of summary of the creed and practice of Islam prefixed to the actual selection of sayings; and this book ought to do much towards cultivating a habit of charity towards those who profess the religion of the Prophet. The compiler modestly disclaims any hope of making these sayings really representative of the mind of the Prophet; he is satisfied that they should represent that of the disciple.

Milton. By Dr. G. C. Williamson. 133 pp. (Bell.) 1s.—Dr. Williamson does nothing by halves, and his confession that, even to write so small a biography as this, he has re-read every line of Milton whether in prose or verse, which is written in English, and has studied afresh many of the Latin treatises, is most refreshing in a day when journalistic methods deface so much of the literary work produced in it. In so serious a spirit as this hardly any man who was adequately equipped for his task could fail to write a good book, consequently this very brief sketch of Milton and his works deserves to take rank with the best of them. It only aims at giving a general account, and at putting before young students a clear view of his subject, and both these aims are perfectly achieved. The biographical portion of this book somewhat overweighs that which is devoted to criticism; but both are equally well done. The book can be read almost at a sitting, and is nowhere either dry or dull. It may be confidently recommended.

Lyrical English Poetry. By Arthur Burrell. viii. + 223 pp. (Dent.) 1s.—There is suggestion of some humour in Mr

Burrell's preface which attempts to account for the omission of love songs and bacchanalian songs from this collection on the ground that it is addressed to the child which is growing into youth. But that point disposed of, his editorial labour still deserves more credit than he modestly enough claims in saying that the arrangement is of quite an ordinary kind. We think not. He begins, for instance, with a section devoted to life, youth and strength (which it ought to be noted includes both Whitman's lovely lines: "There was a child went forth" and "Remember now thy Creator" from the Book of Ecclesiastes), and follows it by poems of imagination, fancy and mystery, then by a section devoted to the outer world, in which are some exquisite gems, then by some lighter verse, and some more serious verse. If these characteristics are not original our memory is at fault, and in every section the selection is brilliant. We are glad to note the inclusion of much that is best from the literature of the Old Testament, for the teaching of this will do more to preserve it than all the divinity lessons which may be instilled into the mind of the coming generation.

Ballads Old and New. By H. B. Cotterill. Part I. x + 122 pp. Part II. x. + 108 pp. (Macmillan.) 1s. each.—It might almost appear that the ballad poetry of England is at present current in as many editions as are either useful or convenient, but we are bound to say that these two collections have important merits and recommendations. They form part of a projected series of English literature for secondary schools in which the volumes will be graduated in difficulty with special reference to the scheme of the Board of Education. Each book will be sufficient for a term's work. Elaborate annotations are not to be given, but a full glossary will be affixed to each text, and also a set of questions so carefully chosen as to direct the study upon right lines by discouraging any cramming. Subjects for short essays are also to be suggested, and by way of helping further study a short list of books will be given in each case, with explanations of the way in which they are to be used, or the special purpose they are likely to serve. It will be seen at once that this is a comprehensive and original scheme, and, as the ability of the editor has often been praised in these columns, there is nothing needful but to recommend heartily the first two books in the series which have been admirably arranged.

The Gospel of Saint Mark in West Saxon. By Dr. J. W. Bright. 84 pp. (Heath.) 2s. 6d. net.—This elegant edition speaks of scholarly care on every page; and the text has been thoroughly edited from the original manuscripts of the West Saxon Gospels. We remarked recently upon a companion volume in this series the omission of notes and glossary from the Gospel of St. John. Precisely the same features are wanting in this edition of the Gospel of St. Mark; but, on the other hand, all the variant readings are given, so that a student of Anglo-Saxon may find merely in this edited text plenty of occupation and look forward to the future appearance of an *apparatus criticus*, which is projected when the completed text shall have determined to some extent the ground it will be obliged to cover. The arrangement of variant readings is clear and careful; each deviation is perfectly and clearly marked, and it may be seen at a glance both what has been changed and also what the other manuscripts and copies contain which tends to support the change. We feel confidence in recommending this elegant volume to scholars and students, because it is not only intrinsically valuable but also forms part of a scholarly series.

Plays for Home and School. By Ettie F. Mosely. (1) Poppyland. (2) Princess Viola. (Relfe.) 6d. each.—It is quite true, as the advertisement sheet says, that these plays are

bright, well within the capacity of young people, and fit for garden or school. It is also true that there is a good demand for good plays. But cannot the author give us something more than the caricatured American woman and the princess with many suitors? We want more action in these plays and less dialogue; and what dialogue there is should be thoroughly good. It cannot do any boy or girl good to learn to parody the Americaine in the person of Ophelie. May we suggest also that Anaryllis is a curious name for a prince, even in fairyland?

The Laureate Poetry Books. Nos. 16-34. (Edward Arnold.) 2d. each.—The Arnold prose-books were reviewed by us last month. We can give the same unstinted praise to these companion books. Of course, they are not for the younger child; no one puts the "Essay on Man" or "Balder Dead" into the hands of the very young. But for anyone who wishes to bring home to his class a poet's style, thought, intention, charm; and for anyone who would use comparative work in his literary studies, these booklets, which lie flat between two leaves of an exercise book, are admirable. Among older anthology friends we meet Matthew Arnold, Gray, Spenser, Thomson.

The World's Childhood. Part I. M. B. Synge, 1-122 pp. (Blackwood.)—Is a well printed, well illustrated introduction to literature, in the shape of folk tales retold for children. It is surely a slip on the author's part to call these tales fairy tales. There is not a fairy tale among them.

Geography.

Europe and the Mediterranean Region. By J. B. Reynolds. 128 pp. (Black.) 2s.—Miss Reynolds knows the secret of making geography both interesting and educative. In her hands the subject becomes from a boy's point of view something worth learning, and as different from the old topographical hotch-potch which used to pass muster as geography as can well be imagined. Her book is liberally provided with excellent maps and good illustrations. The tables of mean temperature and mean rainfall will, with the help of the corresponding maps, enable the student really to appreciate the effect of climate upon vegetation, and upon the suitability of a place for human habitation. The orographical maps will prove of great service in class-work in enabling the teacher to explain the importance of land relief in the solution of geographical problems. We commend this book to the particular attention of teachers of geography.

History.

An English Church History for Children. 597-1066. By M. E. Shipley. xvi. + 253 pp. (Methuen.) 2s. 6d. net.—A history of "our dear Church of England," told in somewhat of a goody style. Everything is for the best, and even Wilfrid of York is made as amiable as possible. England is christianised from both Rome and Scotland, and finally decides for Rome at Whitby. England is part of the Holy Catholic Church. Yet everyone is wrong whose conduct in any way helps to bring in the "foreign" jurisdiction of the Pope.

A Brief Survey of British History. By C. E. Snowden. xii. + 159 pp. (Methuen.) 4s. 6d.—We think this book should be extremely useful to teachers of English history and their pupils, especially those preparing for examination. In the hands of teachers who give their lessons *viva voce* and wish their pupils to have only heads of lessons and matters which must be learned by rote, this is the best book we have seen for the purpose. What few inaccuracies there are can easily be corrected by such teachers who keep their reading up to date. After the Norman Conquest, each reign is summarised

in tabular form with brief but not too brief commentary. And there are twenty-five appendices, about equally divided between English history and that of other countries where they touch English history.

The Glory of London. By G. E. Mitton. x. + 221 pp. (Black.) 1s. 6d.—A good reading book about London and history connected with it. Well printed, and with over fifty good illustrations, coloured and other. But there are many small slips in history and sometimes in topography, which might have been avoided by a judicious revisal of proofs. The date for the first Westminster Bridge, owing to a printer's error, is 1378. It should be 1738.

The Birmingham Midlands. By F. W. Hackwood. 40 pp. (Pitman.) 3d. and 4d.—A pleasantly written sketch, with many illustrations and maps, of the counties of Warwick, Stafford and Worcester. The railways are not so complete in the local map as they might be.

Easy Stories from English History. By E. M. Wilmot Buxton. viii. + 128 pp. (Methuen.) 1s.—Thirty-five "stories" from Caradoc to Gordon, well and simply told, chosen with a view to illustrate each century. Most of them are biographical. There is a list of events, of kings, and an index.

Science and Technology.

Elementary Experimental Science. An Introduction to the Study of Scientific Method. By W. Mayhew Heller and Edwin G. Ingold. 216 pp. (Blackie.) 2s. 6d. net.—Prof. Heller is known to science teachers as an exponent of Mr. Armstrong's views as to the form science teaching in schools should take, and many of them will read this volume expecting to find all sorts of new suggestions. But most of them will be surprised to learn how little Mr. Heller's methods differ from their own. The fact is that even firm believers in the "research" method of instruction soon discover that the exigencies of classroom work demand all sorts of modifications in their ideal, and not a few compromises. Mr. Heller is like most of us, and admits by his practice that in many cases the best teaching method is to tell the pupil precisely what to do, and to indicate with sufficient clearness what he is to observe. The heuristic method unalloyed is suitable for the tutor of a single pupil and with unlimited time at his disposal, but cannot be imported in its pure form into the school laboratory where twenty pupils are to be kept employed in an orderly manner. The science work suitable for school conditions is of the kind the authors give in this book, which supplies a good, sensible course in elementary experimental science. But it must be said that precisely similar courses are to be found in existing books. This volume supplies, however, a series of running commentaries of an admonitory kind to teachers, and these are out of place in a book presumably intended for the pupil. We cannot resist asking, what will Prof. Armstrong say to find the name of a faithful henchman on the cover of a school science text-book? We heartily commend the book to the notice of teachers.

Elementary Experimental Chemistry. By A. E. Dunstan. viii. + 173 pp. (Methuen.) 2s.—A good course of work in elementary chemistry, written by an experienced and successful science-master, which covers the subjects of typical preliminary examinations. The illustrations are numerous and clear, but much of the type is too small for the use of schoolboys. We have been unable to find the plates to which Mr. Dunstan makes reference in his preface.

Notes on Volumetric Analysis. (Enlarged edition.) By J. B. Russell and A. H. Bell. 89 pp. (Murray.) 2s.—The notes

published in 1898 are here amplified by the inclusion of chapters on the use of potassium bichromate, silver nitrate, iodine, and sodium thiosulphate. The exercises and numerical examples given at the end of the chapters will prove useful for class purposes. The volume forms an excellent introduction to the subject.

The Radio-active Elements, and a Short Introduction to the Study of Organic Chemistry. By R. L. Taylor. xxvi. pp. (Heywood.) 6d. net.—This booklet is intended as an appendix to "The Student's Chemistry," written by the same author. The phenomena observed with radium compounds are briefly described in a simple manner, and, in the latter section, the general nature of organic chemistry is explained by the study of a few typical compounds.

Mathematics.

Key to a New Trigonometry for Schools. Part I. By W. G. Borchardt and A. D. Perrott. 240 pp. (Bell.) 5s. net.—There is no preface to this key, so that it is not quite plain for whose use it is intended. It might possibly save some time for an overworked teacher, though we are inclined to think that it is always better that the teacher should work out the solutions for himself. For private students a key, if judiciously used, is certainly useful, but it should be prohibited to pupils working under the direction of a master. The solutions here given are usually compact and well arranged; in our judgment, however, the logarithmic treatment of the solution of triangles might be improved by showing more clearly the logarithms of the various numbers. On page 70, for example, the logarithms of s , $s-a$, &c., might be given in the same line as the numbers themselves, and, even though this involves additional writing, each factor in the scheme for finding the angle should appear in front of its logarithm; there is no need for the sign of equality, as a vertical line separating numbers and logarithms is quite sufficient. We think there are too many examples in which only one element of a triangle is determined; checks on work are hard to find unless the triangle is solved completely.

A Key to Elementary Algebra. Part II. By W. M. Baker and A. A. Bourne. 246 pp. (Bell.)—The solutions, so far as can be judged by an examination that falls short of the actual test of daily use, seem accurate and clear; the chief value of the book to teachers will probably be found in the graphical sections.

The Rudiments of Practical Mathematics. By A. Consterdine and A. Barnes. xv. + 332 pp. (Murray.) 2s. 6d.—This book is intended for the use of students over twelve years of age, and is written from the same point of view as the "Practical Arithmetic" designed for younger pupils and noticed in THE SCHOOL WORLD for May, 1905, p. 194. We can only repeat what was said of the smaller work, and express the hope that the book may obtain a fair trial; there are unquestionably many classes of students for whom the course here laid down should provide not only a considerable stock of useful mathematical results but also a valuable mental discipline.

Arithmetic and Geometry. A Scheme for Teachers and a Plea for Educational Reform. By C. T. Millis. 36 pp. (The Educational Supply Association.) 9d. net.—We would very earnestly recommend this pamphlet to all who are interested in the teaching of elementary mathematics; in a short notice it is quite impossible to convey an adequate notion of the arguments for the proposals so fully outlined in the scheme, but they deserve the serious consideration of every teacher. While it is probable that too much is expected from changes in method, there is no doubt at all that current practice, even though it has been modified at the instance of educational

authorities, is far from satisfactory, and the mature views of an experienced teacher who has really studied the questions at issue should receive the attention that their detailed statement calls for.

Woolwich Mathematical Papers for the Years 1895-1904. Edited by E. J. Brooksmith. (Macmillan.) 6s.—The papers for 1904 should be of special interest, as indicating the actual working out of the recent changes in mathematical programmes. The collection is so well known that it is sufficient to call attention to the new issue.

Mechanics. A School Course. By W. D. Eggar. viii. + 288 pp. (Arnold.) 3s. 6d.—As a school subject mechanics has too long been little more than a branch of mathematics, and a pupil who has acquired facility in the solution of mathematical problems usually finds little difficulty in running through the exercises in the older type of text-book. While there is undoubtedly a certain kind of value in this type of mechanics, there is only too great reason to fear that the steady divorce from experimental verification of the principles of mechanics which has up to this time been too prevalent in schools (and colleges) has reacted very prejudicially both on the pupil and on the subject. In the text-books of "Applied Mechanics" great attention is necessarily paid to details that are out of place in a school course, yet the distinction between Theoretical and Applied Mechanics is mainly artificial, and the separation of the two subjects, especially in the early stages, is very prejudicial to the pupil. We therefore give a hearty welcome to this work by Mr. Eggar. The course laid down is of a common-sense kind, and the expense it entails should not be prohibitive. Mechanics is, we think, a very difficult subject for schoolboys, though it is not difficult to prepare boys with the requisite mathematical attainments to solve text-book problems; but the subject if studied on the lines marked out in a work like this should become both simpler and more educative.

Miscellaneous.

The Life of Christ—a continuous narrative in the words of the A.V. With introduction and notes by Joseph John Scott, Canon of Manchester. xii., 1-353 pp. (Murray.) 7s. 6d.—This is a diatessaron following the lines of Tischendorf's famous "Synopsis Evangelica," and in his preface and introduction Canon Scott states his position as that of one who reads all that is written and inclines to conservative views. The brief chapters or sections which deal with textual criticism, higher criticism and the like, are very lucid and sane, and will be extremely useful to those who wish to know what may be accepted as the result of the scholarship of such men as Bishop Westcott and Dr. G. A. Smith: it is perhaps unnecessary to say that the "advanced" views of many modern critics are more destructive than ever, and that there seems to be little sign of any reaction. The notes are clear and, for the reader who does not want to treat the Gospels as their incomparable literature may be treated, sufficient. Reference may be made to two or three crucial passages. In the notes on the Lord's Prayer we miss any notice of the explanations given to the words "Lead us not into temptation"; the quotation from Psalm xxii. on the cross is scarcely spoken of; no adequate note is written on the parable of the Unjust Steward. There are two admirable maps and full indexes. Probably the student of the Gospels will have to wait long before any attempt is made to edit and annotate even one gospel for English readers. The scholar has his commentaries on the text and incidentally on the meaning; and numbers of books such as Mr. Latham's "Pastor Pastorum" throw light on isolated passages. Lives of Christ, such as that of the Abbé Fouard, contain suggestive

notes, and the extremely beautiful "Evangiles" of M. Lasserre form in themselves a commentary which has no parallel in English. But no publisher has yet given us an annotated copy of any gospel or epistle, the text and the subject and the literature being treated with the same care, fulness and fairness, as that with which we treat the Agamemnon. We appear to be afraid of such an edition.

The Religion of Israel. By R. L. Ottley. xii. + 228 pp. (Cambridge University Press.) 4s.—This book is an attempt to discuss in outline the course of the spiritual history of the people of Israel. It is deserving of great attention, and we cordially recommend it to teachers and no less to candidates for Holy Orders, nor is it undeserving the attention of "gentlemen ordained." It forms an admirable supplement to that "Short History of the Hebrews" which it was our pleasure to praise some year or two ago; but whereas that work was devoted to the political, economic and social aspects of the history of Israel, the present volume aims at presenting a sketch of the spiritual development of that wonderful nation. The treatment of the subject is not only scholarly, but it is thoughtful in the highest degree. The new and higher criticism is drawn upon, but the writer is reverent throughout, and without leaning wholly towards either school Mr. Ottley tries to find a sober expression for a view which includes both the old and the new. The lucidity of the author's style is one of the best points in this admirable volume, which embodies a great deal of scholarship, is thoroughly up to date, and has been the subject of great and painstaking care.

The Gospel according to St. John. By Rev. A. Carr. xviii. + 144 pp. (Cambridge University Press.) 1s. 6d. net.—In this edition the text of the Revised Version of the New Testament is followed. This makes for compression, because the very existence of that text renders unnecessary a great many of the notes and explanations involved in the use of the text of the Authorised Version. But this volume, like those that have preceded it in this series, will still serve a useful purpose in drawing the attention of youthful minds to some of the important changes made by the more recent version; and the editorial work upon it has been singularly well done. We invite the attention of all teachers to the introduction, which notwithstanding its brevity is one of the best things of its kind that we have read lately. The notes are never unwieldy, nor are they too numerous, and they embody the most recent views of sane and liberal criticism. A word of praise must be accorded to the beautiful maps which illustrate this volume.

Denominational Teaching and the Education Act of 1902. By Hakluyt Egerton. viii. + 1-109 pp. (Allen).—Anyone who likes to see an argument pushed home, and who is ready to fight the secularising tendencies in primary education, will be grateful for this little book. Mr. Egerton attacks the well-worn subject from a new point. A couple of short quotations show part of the drift of the book. "A public elementary school as such is entirely secular. The presence and the absence of religious teaching are both utterly irrelevant to the status of a school as a public elementary school" (p. 61). "The denominational elementary school retains all its old functions, and some of them are outside everything that is constitutive of its character as a public elementary school. As a teaching institution it has a nature wider than anything denoted by its character as a public elementary school. In that character it is entirely secular" (p. 63). "Fortunately," adds our author, "the conscience clause rule is provided no less than in non-provided schools. No child is compelled by the State to accept the vague and half-articulated credenda of undenominationalism."

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.

Oral Examinations in Modern Languages.

In the February number of THE SCHOOL WORLD there appeared an article by Dr. Edwards, with the above title. In it he points out how oral tests are coming to be recognised as an essential part of examinations in modern languages, and throws out suggestions of the lines on which such tests should be conducted. What a relief it would be to the minds of many modern language teachers if they could only rest assured that their pupils would be submitted to some such fair and rational test! Unfortunately, matters are still very far removed from the ideal condition depicted in Dr. Edwards's article.

Let us consider for a moment how oral examinations are conducted generally. A foreigner, or, where possible, an Englishman with an intimate acquaintance with the foreign language is sent down to a school or a "centre" to examine candidates at the rate of perhaps forty a day. He knows nothing about the pupils beyond the fact that they are "Senior" or "Junior," he has had no opportunity of seeing them taught, and he has not had time to read the set authors on which he might base his examination. As the candidates are taken either singly or in batches of two or three at a time, and as the examiner has to be careful not to take the same subject of conversation with two candidates, or two sets of candidates, lest those who have been examined should give hints to those who have not, it follows that in large centres the examiner must be a man of amazing fertility and resource to find fresh subjects of a suitable nature for conversation. In fact, I think I am justified in saying that it is impossible. In the course of my experience I have assisted at oral examinations in which some candidates "got off" with answering most easy questions on the garden or their clothes, while other candidates for the same examination were questioned on such subjects as the entrails of a locomotive or the fighting units of a modern fleet. I do not wish in the least to criticise or to blame the oral examiners in any way. I have always found them most patient, most anxious to set the nervous candidates at their ease, and eager to find subjects on which the candidates could talk; but when we take into consideration the fact that they have to work from 9 to 1 and from 2 to 5 in order to get through the examination in the limited time put at their disposal, who can wonder that they are exhausted long before the day is over, and that their powers of invention are drained dry before the examination is half finished? What *has* moved my unqualified admiration has been the wonderful patience and kindness invariably displayed by these ladies and gentlemen under very trying conditions. Everyone is agreed that modern language teaching in England is still in the experimental stage, and there is no doubt that some of the most valuable experiments are being made by the oral examiners.

But how is order to be produced out of this chaos? If modern language teachers knew that their pupils were to be examined by Dr. Edwards or by the method suggested by him in his article, I very much fear that, being but mortal, they would succumb to temptation and would spend the greater part of the summer term in telling their pupils short stories, and making them reproduce them on the spot, thus cultivating what I believe is frequently described as a whist memory—by no

means an ideal form of education. They might also be tempted to spend an hour or so a week in cramming into their pupils' reluctant heads a few scraps of French geography and history, enough, in fact, to last an examination of fifteen minutes' duration. Most modern language teachers will agree that the method and subjects hinted at by Dr. Edwards are right. One of the main objects of the teaching is to take the pupils in spirit—if not *in propria persona*—to the foreign country and to give them an idea of the country itself, of the manners and customs of its inhabitants and of their daily life. I would venture to suggest that the various examining bodies which conduct oral examinations should publish a rough syllabus of the subjects which will be treated in the oral examination. The examiner will be left a free hand as to how he conducts the examination, whether on the lines suggested by Dr. Edwards or in any way that seems good to him. Success in the examination will thus become much less a matter of chance than at present, and teachers will be saved from frittering away much valuable time in trying to cram their pupils in subjects which they think likely to be chosen for conversation. I venture to suggest the following syllabuses for Junior, Senior, and Honours candidates.

For Junior Candidates.—(1) Journey to foreign country. introducing cab, train, steamer, arrival at friend's house, etc.

(2) House, furniture, servants, callers.

(3) Meals and food.

(4) Daily life and occupations at home, school, parts of the body.

(5) Streets and common objects in same, *e.g.*, café, restaurant, police, gendarmes, soldiers, workmen, etc.

(6) Money, weights and measures.

At first sight this looks an enormous quantity for one year's work, and I can fancy some teachers raising incredulous eyebrows and hands at the mere suggestion that such a quantity of work should ever be attempted. But if French is taught on modern lines throughout the school most of these subjects will have been worked up more or less elaborately in the first stages of instruction and will only need revision and practice—an hour or so a week—to bring the candidates up to examination standard. At the same time it must be confessed that, with the set books and composition so frequently demanded, the teacher must learn to practise strict economy of time.

For Senior Candidates.—(1) The chief physical features of the country, mountains, rivers, lakes, etc., and the chief towns.

(2) The chief trades, manufactures, etc., connected with the chief towns, the agricultural products.

(3) A knowledge of the capital of the country acquired by means of a map, photographs, etc.

(4) The system of government in broad outline.

(5) The army, system of compulsory service.

(6) The navy, system of compulsory service.

(7) Education.

(8) A short sketch of the history of the country in the barest outlines.

Here again the quantity appears large, but by the time a candidate is old enough to take a "Senior" certificate he ought to be sufficiently advanced to take unseen translation in the examination. This will leave the teacher a free hand in selecting his reading matter, and he will be able to choose both prose and poetry of the best style bearing on his conversational hours.

For Honours Candidates.—(1) A short period of literature, if possible a so-called classical period.

(2) The history of the country during that period.

To turn now to the method of conducting the examination. Under the late headmaster of this school—Dr. Findlay—a most interesting experiment in oral examination was made. The

master took the form in the presence of the examiner and held a conversation class, the boys being arranged in a particular order, and the examiner being supplied with a plan of the form containing the boys' names in the order in which they were arranged, to enable him to make any note he wished against a boy. At the end of half-an-hour the examiner took the form himself and discussed with it any subject he thought fitted to its attainments, taking into consideration the boys' average age and the standard of the examination they were supposed to be entered for. He was thus enabled to examine more candidates in a shorter time, the candidates were encouraged by one another's presence, the conversation became more general, and what in other circumstances had always appeared a dreadful piece of drudgery became a most amusing and instructive hour's work. Further, the examiner had the candidates under his observation for sixty minutes instead of five, and was enabled to offer some valuable criticisms and suggestions as to the methods of instruction that were adopted. Of course, this system has its disadvantages. In the first place, it is only feasible where candidates are being examined at their own school; secondly, the pushing boy, by the display of superior agility in waving his hand, is apt to attract an undue share of the examiner's attention, who, however, can obviate this by putting a "tick" to each boy's name on his plan as he answers, and thus guarantee that the youth of a modest and retiring disposition shall have his share of attention; thirdly, as reading is an essential part of an oral examination, while one candidate is reading the others are unoccupied, but the awful presence of the examiner is sufficient to check any undue symptoms of restlessness.

On oral examinations and the method in which they are conducted depends very largely the fate of modern language teaching in England. Teachers are bound in self-defence to model their teaching on the examination for which they are preparing their pupils, and the teaching of modern languages will be aimless, unmethodical, and wasteful of time and energy, so long as the oral examinations are the uncertain quantity they have been hitherto. At present a candidate's success or failure is largely a matter of chance; if he gets a congenial subject, he can stammer out a few words sufficiently connected to satisfy the sympathetic examiner; if he does not, he sits as dumb as the sheep before its shearer, experiencing similar sensations. On the other hand, the examiner must not be unduly fettered; regulations may be laid down as to the subjects he is to base the conversation on, but he must be left absolute freedom as to the manner in which he chooses to handle each subject.

F. REYNOLDS.

Intermediate School for Boys,
Cardiff.

The History of Literature as a Subject in Secondary Schools.

THE enthusiasm of recent movements for reform in educational methods is not quite free from the iconoclastic tendency which inevitably marks the progress of revolution. The clearer apprehension of the importance of methods of study, as distinct from the actual knowledge that may be acquired in school, would seem to lead many to undervalue the knowledge, and to forget that the possession of a considerable store of knowledge is a very important part of the equipment necessary for a satisfactory start in life. It may be that education must be so defined as to limit the application of the word to what it is the fashion to call mental gymnastics; but, if so, it must be conceded that the school has other functions besides those which are educational in the sense of such a definition. Heuristic methods must supplement, but not displace, didactic methods in the school, as in after-life, and it is hardly premature to warn those who are vigorously engaged in pulling up the

tares that they may in the warmth of their zeal destroy much good wheat.

Amongst the studies which run the risk of grievous injury at the hands of reformers is the formal study of the History of English Literature. It would be difficult indeed to withhold sympathy from any attacks on the preposterous absurdity which, under pressure of the written examination system, came to be regarded as the study of the History of Literature. No sarcasm could be severe enough for the travesty of education which sought to prepare the unfortunate student to name, with dates, at a moment's notice, the authors of half a score of fifth-rate literary efforts, chosen at random, and to locate a number of characters occurring in books which he could by no possibility be supposed to have read. The study which fitted the student for such an ordeal was about as interesting and as useful as the attempt to commit to memory the catalogue of a cattle show.

Indignation should, however, be tempered by prudence, and the educationist, not content with mere destructive criticism, should endeavour to preserve a valuable study while wresting it from an undesirable groove. If the following suggestions are fortunate enough to elicit the mature criticisms of experienced teachers they will have served a very useful purpose.

In order to avoid the excessive detail by which the study of the History of Literature has been seriously injured, it is evident that a school syllabus must be based on a principle of selection. On the other hand, it must not be a mere portrait gallery, but must preserve a strictly historical character, and exhibit the development of literature as the growth of an organic life. The following plan would appear to avoid unnecessary detail, and yet to embrace a sufficiently comprehensive and symmetrical view of the History of Literature for school purposes:—

- (a) Select a list of the greatest authors for detailed treatment.
- (b) Choose a further list for individual, but less detailed treatment.
- (c) Add outlines of certain periods, and of certain departments of literature.

The authors in list (a) might be studied as follows:—

- (1) A good biographical sketch.
- (2) A full outline, somewhat on the lines of Lamb's "Tales from Shakespeare," of a few of the principal works of the author, freely illustrated in class by ample quotations from the original.
- (3) A critical appreciation of the author's place in literature, in the course of which the student could be made familiar with the principal founts of literary criticism, and the grounds on which the greatest critics have based their judgments of literary work.

The authors in list (b) might be studied on the lines made familiar by the ordinary manuals of the history of literature, but individual works of exceptional interest or importance should be singled out for special detailed notice.

The outlines in (c) might be on the model of popular lectures, and should aim at giving the student a knowledge of the history of literature similar, for example, to the knowledge of astronomy which may be derived from such popular expositions of that subject as those of Sir Robert Ball.

For detailed treatment [list (a)], the following authors might be selected:—Shakespeare, Milton, Dryden (?), Scott, Wordsworth, Coleridge, Shelley, Byron, Lamb, Tennyson, Dickens, Thackeray, Carlyle, Ruskin.

For separate, but less detailed treatment [list (b)] might be chosen:—Chaucer, Spenser, Bacon, Swift, Pope, Burns, Burke, Goldsmith, Moore, Southey, Browning, George Eliot, Newman.

The summaries (c) might treat of:—The period before Chaucer; from Chaucer to Spenser; Elizabethan drama; eighteenth-century literature; the essayists, including the growth of magazines and newspapers; the novel; the historians.

Such a syllabus spread over a four-years' course would not prove burdensome to student or teacher, while the knowledge it stands for would be a very valuable possession. The importance of chronological order as the key to the growth and development of literature might be observed whether the actual order of time were followed or inverted in a particular school. A sound study of the history of literature, supplemented by a judiciously prescribed course of reading and free access to a well-stocked school library, would prove one of the most valuable and one of the least troublesome of educational agencies.

St. Munchin's College,
Limerick.

ANDREW MURPHY.

The Heuristic Method of Teaching Science in Schools.

FROM the educationist's point of view the heuristic method is no doubt thoroughly satisfactory. But with regard to its use in schools, we must consider it from the practical teacher's point of view, taking into consideration circumstances now existing and likely to continue to exist. There are many conditions which are quite inseparable from school work, and in choosing his method of teaching the master must take all these into account. The first of these is the time available for science work. Having regard to the many branches of study that have to be included in a secondary school curriculum, five hours weekly is as much as can possibly be allotted to science periods. Mr. Heller considers that teaching by heuristic methods should begin at the age of eight, and that, between the ages of thirteen and sixteen, the pupil should spend from four to six hours a week in the laboratory (presumably he would prefer the latter) and do in these last three years only as much as many schools work through in a year, or in a year and a half. And it is quite possible that the pupils in these latter schools, taught on rational lines, would have as good a knowledge of scientific methods and a much better knowledge of scientific facts than the pupils who have undergone three years' heuristic training. Even at the slow rate at which Mr. Heller progresses, he confesses that the pupils, *juvenile or adult*, profit immensely by going over the same course of experimental work twice, *i.e.*, that even the simplest research without preliminary knowledge is of little value to the average student.

Again, we must remember that the heuristic pupil, when performing a simple piece of experimental research, should be practically in the same state as regards scientific knowledge as the original performer of the experiment. These original discoverers—the Newtons, Daltons, Cavendishes, and Blacks—were ranked amongst the foremost intellects of their age, and this is a position that we can hardly expect the average school boy to occupy.

The result is, that the pupil is considerably in the dark as to the argument of his experiment, and in the majority of the cases remains so, until further training has considerably increased his mental powers; hence the necessity of a repetition of the course.

Apparently a purely heuristic method should continue through a three years' course, terminating at the age of sixteen. (We fancy that, under the conditions prevailing in our secondary schools, the majority of pupils would not complete their ordinary third year course in science till they were seventeen.) So, according to Mr. Heller's syllabus, at that age, though they might have a perfect knowledge of scientific methods, yet their knowledge of scientific facts and the progress of modern scientific thought and discovery would be small. Not even the most advanced heurist would deny the value of such knowledge as a means of broadening the mind.

The fact is, reformers are rushing into unknown realms without first settling what the goal is to be, and without regarding existing limit

Then, to deal with another point which the heurist regards with lofty disdain, but which the practical teacher must consider and, we are afraid, always will have to consider—namely, examinations—it appears, as “Examiner” says, that the heuristic method by no means produces satisfactory results.

The heurist is too much inclined to assume that, once an experiment or a certain piece of reasoning has been performed, the pupil will always be able to repeat the performance without further revision.

This certainly is not the case with young pupils, and Mr. Heller does not seem to have found it the case with his adult students. In other words, the heuristic method makes too little allowance for the naturally illogical nature of the average boy.

The fact remains that examinations have to be prepared for, and those intended for boys of the age of sixteen to eighteen require a much wider knowledge of scientific facts and even of scientific method than can possibly be imparted by a teacher who follows out Mr. Heller's scheme of instruction. And although it may be possible to bring forward individual cases of students who have reached the standard required in such tests, yet we must not consider the exceptions, but at the best the average boy.

With regard to Mr. Heller's explanation that the answers quoted by “Examiner,” as the result of his attempt to discover how far heuristic pupils are able to apply the methods they have practised to strictly analogous problems, are to be looked on or even commended as showing scientific caution, we should like to remark that such a non-committal policy is certainly no characteristic of a great discoverer. We should be inclined to consider that such answers showed a complete failure to grasp the principles of the experiments which the pupil had performed, and we wonder what the heurist would say to a pupil who, after working a mathematical problem about the price of eggs, excused himself for failing to solve a similar problem concerning the price of ducks on the ground that “we have not done this problem before.”

In conclusion, it seems that—until all Inspectors are agreed on one method of heuristic inspection, and until all Examiners have learnt how to examine heuristically-taught students and all Examining Bodies have narrowed the scope of science examinations, and as a result lowered the present standard of knowledge, and until there is one, and only one final school-leaving examination—it is outside the range of practical secondary education, as at present carried on in England, to confine one's science teaching to the heuristic method.

Hull.

DENHAM CLARKE.

A State Department for Education in Ireland.

FATHER MURPHY, in your July number, repeats the well-known objection of the Roman Catholic hierarchy to a State Department of Education for Ireland, but without supporting it by any reasons. If this means an objection to co-ordination *per se*, it would be a misfortune for Irish education, as the difficulty of proceeding with it would be seriously enhanced, if not insuperable. If it is only an objection to a particular form of co-ordination, it would be worth while to know what it is, as it would then be easier to find a form which might prove generally satisfactory.

As a matter of fact, there are at present in Ireland three separate State Departments of Education: the National Board responsible for primary education, the Intermediate Board responsible for intermediate education, and the Department of Agriculture and Technical Instruction responsible for technical instruction, and also sharing with the Intermediate Board the responsibility for the teaching of science and drawing in intermediate schools. The work of these three departments overlaps, and there is no recognised body whose duty it is to prevent

it. That there is pressing need for them to be brought into harmony or co-ordination is plain to themselves and the public, as may be seen from the following facts. These boards have themselves appointed a Consultative Committee for co-ordinating educational administration; this, however, meets but seldom, is voluntary, and has no binding force. The Catholic Managers' Association, at their recent annual meeting, passed a resolution urging on all clerical managers to endeavour to co-ordinate the education in their several schools with the course of education in technical and intermediate schools. A similar resolution was passed at the Technical Committees' Congress in Limerick in June. Boys from primary schools have this year been entered for intermediate examinations, and perhaps nothing occasions more difficulty in intermediate schools at the present time than the co-existence of two educational authorities over them. The problems of Irish education are becoming more complicated every year, and it is hard to see how they are to be solved except by a combination of these various State Departments into one.

But Father Murphy's letter suggests that the objection is to a State Department worked from Westminster. This seems fantastical. Any department in receipt of money from the State must be responsible to Parliament, but not necessarily worked from Westminster any more than any one of the present boards. Surely it is conceivable that an Irish Department of Education should be as independent of London as that of Scotland, and as practically autonomous as the Department of Agriculture and Technical Instruction. A single department would be likely to be better able to deal with the Treasury than three separate ones, nor does there appear any reason to believe that under it managers and schools need have less religious and educational freedom than at present.

Perhaps there is a third objection. It has not seldom been stated that co-ordination is impossible so long as there is no university education acceptable to Catholics. Does this mean that poor children are to be denied the opportunity of a higher education because some of them cannot attain the highest? Surely the case for a university suitable for Catholics would be stronger if it were possible to say: “We have provided an educational ladder as high as it is in our power; our students are climbing from the bottom as high as the ladder reaches, but it is not high enough; we want a ladder which will reach to the very top.”

JOHN THOMPSON.

Dublin.

The School World.

A Monthly Magazine of Educational Work and Progress.

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SIXPENCE.

THE PROBLEM OF SATURDAY AFTER-NOON AT A DAY SCHOOL.

IT was a third-class compartment on a morning train, filled with business men and tobacco smoke. Some schoolboys had just got out and, as they went along the platform, were letting off their superfluous steam by banging each other with their satchels. "Well, I wouldn't let a boy of mine attend a town school," said one of the business men. "What do you think, Mr. Jones? I don't like this railway travelling for a boy, and it seems to me they only pick up a lot of loafing habits, get smoking and sitting about when they ought to be playing football or cricket. I see them down at the terminus there on Thursdays, when I get away early; they are there long before the train starts and they don't know what to do with themselves. They go along banging doors, annoying folk and making themselves a general nuisance; not to speak of their hanky-panky tricks when they're in the train, putting the small boys on the rack, bagging each other's caps, strapping new boys and such like goings on. Can't blame them, I suppose. Boys will be boys, but I don't care for that sort of thing for any lad of mine, and that's why I think it's worth making a bit of a sacrifice to send my youngster to a boarding-school."

I was struck with what the gentleman said. There was sound philosophy in it. It isn't only the schooling, nor mainly the schooling, but it is the employment of leisure which makes or mars a man. In fact, when at work boys, like men, all more or less conform to type; they are under restraint; they have a prescribed task; their chief moral principle, the principle of choice, is in abeyance; they submit perforce to the direction of another's will. But in leisure time they are their own masters; their choice has free scope; restraints are removed; individuality finds its scope; they direct themselves.

How does a boy at a town school employ his leisure? It struck one the enquiry would be interesting. In elementary schools several investigations have been made and there are returns showing in detail how many children in their leisure supplement the family income by acting as news-vendors, bootblacks, errand-boys, knife-

cleaners and so on. At a secondary school one taps a different social stratum and the problem is different.

At a boarding school we know what happens; each boy is accounted for, and as a rule, well accounted for. The days of Stalky and Co. are past. There are no more moving adventures by field and flood, no more hair-breadth escapes from armed keepers, no blood-curdling encounters with infuriated farmers. Everything is organised now; leisure as much as lessons conforms to a regulation pattern and the excitements of Nimrod are extinguished for ever. There is one established type, the cricket-and-football type, and whosoever conforms not to that type, the same is a good-for-nothing, a smug and an outcast. There is a general air of recreation by machinery. The public school boy like the monk lives by a rule. It is good of its kind, but it is not of the highest kind, it is too systematised to allow room for that element of liberty which is the condition of excellence in all human affairs. The boy gains skill at cricket and football, but he loses himself.

The boy at the day school has his liberty. How does he use it? The question is of interest, and in order to get some sort of idea of what the answer was, a large secondary day school was selected in an industrial and commercial centre, a school which, like most City day schools had no Saturday morning lessons and no playing field immediately attached to the school buildings. The month of March was taken because all football and lacrosse, with the exception of a few out-matches, had been stopped to give the ground a rest, and therefore boys were thrown more than usual on their own resources. On Monday morning each boy was asked to write down on a slip how he had spent his Saturday afternoon. If he was playing games, he was told to state whether he was playing for his school or some local club; if he was looking on, whether he was watching professional play or amateurs. The particular Saturday was fine and the only school game provided, beyond the matches above mentioned, was a hare and hound run. That the answers given were in the main quite *bonâ fide* is quite clear. Of course, no boy was likely to incriminate himself by writing down, "I was smoking a tab cigarette behind a hedge," but the answers were anonymous except where a boy of his own accord (probably from

long-ingrained habit) wrote his name at the top of the paper slip, and no notice was given, so that no opportunity was given for any preconcerted action.

The results of the investigation were as follows:—

Playing—	
Football—School	11
" --Local	109
Lacrosse—School	12
" --Local	7
Watching—	
Football—Professional	40
" --Local	58
" --School	2
Lacrosse—Local	14
Harriers—School	30
Cycling	80
Walking (more than eight miles)	53
Visiting or entertaining friends	53
Photography	6
Working in garden	42
Carpentry, &c.	20
Matinée at theatre (including seven at German Play)	15
Reading at home, and in public library	36
Working at home—lessons	51
Cricket, golf, and hockey	29
"Strolling about"	48
Botany, field and pond life, &c.	13
Stamp collection	4
Father's business	10
Watching volunteer review	17
Fishing, 2; gymnasium, 1; church or S. S.	10
Walking on stilts	2
Unclassified	17
Total	789

The first thing that strikes one in looking at these statistics is the small part played by organised games. This is the point on which a day school Saturday offers the sharpest contrast to the boarding school. And the next thing that strikes one is the unboyish nature of the occupation in many individual cases.

"I was doing my drawing home-work, which takes me two to three hours"—a subtle appeal to the hard-hearted drawing master. "I went a walk through the cemetery and through the meadows with a boy friend"—a poetic youth, a sort of cross between William Wordsworth and Hervey's "Meditations among the Tombs," and like unto him is another, who says, "I spent it by the sad sea waves." Another boy spent his afternoon cataloguing in a library. Another, "Went with a friend to a neighbouring doctor's house; we amused ourselves in going round the surgery and tasting the different medicines." What the doctor said is not recorded; the boy still survives. "At 1.15 . . . came in and we talked for an hour and a half indoors." "After dinner I read 'Agnes Grey' and then played the piano, after which I strolled about spending a pleasant time in resting." Every teacher will recognise the type, born tired and with unbounded capacity for repose. "I was in a free library reading." "I went with

a friend to see an ox slaughtered." "I prepared myself for an evening party." "I went rating" (presumably a slip in orthography). "Sat in an L.N.W. Railway train."

Oh, Liberty! What crimes are committed in thy name! It cannot be said that the ratter, the boy with the Blutlust and the boy who prepared himself for the evening party are all conforming to the uniform type. Extremes meet in the day schools. Some of the answers show strong precocious development of journalistic tendencies, *e.g.*, "Saturday afternoon found me gazing in anxiety at the heavy clouds that passed overhead in endless succession—anxiety due to the fact that in the morning a new bicycle had arrived for me from the makers'" The sequel narrates how "Whilst engaged in buying chocolate, it started to rain" (*sic*).

A good many help their fathers, delivering with a trap, making themselves useful in the dentist's surgery, "helping mother to put curtains up" (a symptom of spring cleaning), "trying to invent various electrical apparatus" (a doubtful service from the domestic point of view); most of them either running errands or digging in the garden, one of the latter remarking that, in spite of his attentions, "the plants are still alive." Another took "our dog" for a swim in the canal. "When I reached home I and the dog had a good appetite." Another went for a three-mile walk, called on some friends and sat a hen on nine eggs. Another went to see a friend who keeps hens. "He told me he had got a brooding hen sitting on some eggs and he said that they ought to have been hatched on Thursday. He gave me an egg and I could hear the chicken scratching inside." There is a beautiful touch of domesticity about the following: "As it was my sister's birthday, we gave our presents, and then we went to have a look at our baby, which was just a week old." Very boy-like and business-like is the following: "2 p.m., went to play cricket, but, as nobody was ready, I went to the apple-loft (for reasons everybody knows): 2.30 p.m., saw my brother fall into brook and nearly fell in myself; 3—4 p.m., played cricket; 4—4.30 p.m., had tea; 4.30—5 p.m., played cricket."

By way of comparison, I have some fifty returns from boys in the higher standard of a few village elementary schools. Here there are no school games; indeed, games occupy a very secondary position altogether, though the local football team evidently provokes some measure of enthusiasm. "When the men are playing they let us have part of their field." Marbles, however, seems to be the favourite game. But all the boys are out of doors: there is no "homework" or reading in the free library. Most of these boys help at home chopping sticks, getting in the coals and water, going for the milk, sweeping the yard. Some are occupied as errand lads, but most do odd jobs on farms. they pick the stones, drive the cattle, help to build walls and repair them (the schools are in Westmoreland), they mark the lambs, take out tea to the men in the fields, one teaches calves to follow

him "when they have halters on, as that if they were going to be shown at an agricultural show they would walk round the ring instead of running about"; they help to fell hedges, set potatoes, weed the gardens, water the onions, scale manure, truck sacks, clean the harness, bed the calves, riddle the soil, chop hay, crate chickens, nut cake, pump water, dust the church and destroy wasps' nests. Another makes people ready for shaving; "this process is called lathering." Another goes as caddy and earns two shillings in the afternoon, "which is more than father gets." In face of these things how say some that it is the monotony of rural life which depopulates our villages?

All this goes to show the immense variety of the day boy's life as contrasted with that of the boarder. Here is no social mill that grinds all his angles down and crushes all the savour of individuality out of him. It shows also that the day boy is much more in contact with the realities of life, some of them crude, it is true, but all of them real facts. It shows how much better a chance the hobby has among day boys. One of the mistakes schoolmasters are most apt to make is that it is their duty to protect children against all influences not expressly provided and administered by themselves. The best antidote to this is the home, and the best way in which a home co-operates with a school is that it affords relief to the obsession of certain dominating ideas and gives breadth and variety and social sympathy to life. Where a boy is usefully employed at home or on work for his home; when he has the companionship of his father or family in prosecution of some useful mechanical or intellectual hobby, it would be mere mischievous *sottise* for any pedagogic system to intervene and compel the boy to play football and cricket. So much is clear, and even though it means a lower standard for the school games, every sane person will recognise, what public schools forget, that games were made for man, not man for games.

But the case is different with the loafers who can give no rational account of themselves, the boys who were hanging round, "thinking" perhaps, as one of them said, "that mother might want me." These boys provide no occupation for themselves, but they provide plentiful occupation for Satan. Here clearly is a case where parents and schoolmasters should agree together; these boys have to be saved from themselves, and unless the parent is prepared to see that leisure is not frittered aimlessly away, he should give *carte blanche* to the schoolmaster to compel the boy to some form of school game in God's out of doors. A good many boys, even at the public schools, need the initial compulsion; it is like the gentle push at the side of the bath when one is teaching to swim; once a lad has got into the thing, he plays as keenly as anybody, and no further compulsion is necessary. Co-operation between parent and schoolmaster, with discriminative coercion and discriminative liberty on the part of both, would appear to be what is wanted in the new municipal day schools, which are springing up by the hun-

dred among us, if we are to see in England a saner, healthier use of leisure time. What you want to see in the nation, as Humboldt said, you must first put into the schools.

THE TEACHING OF EXPERIMENTAL MECHANICS.

By W. D. EGGAR, M.A.

Eton College.

SIR, it is no matter what you teach them first any more than what leg you shall put into your breeches first. Sir, you may stand disputing which is best to put in first, but in the meantime your breech is bare. Sir, while you are considering which of two things you should teach your child first, another boy has learnt them both.—BOSWELL'S "Life of Johnson."

AT a recent *conversazione* a minnow author of a book on mechanics received simultaneous attacks from two benevolent tritons, and must have been annihilated but for the timely intervention of a red-herring. The red-herring took the shape of a discussion on the order of teaching statics and kinetics, and proved so attractive that the minnow slipped away unheeded. Since then he has found the utterance of the great lexicographer, which is printed at the head of this article. He commends it to the consideration of Professors Perry and Minchin, in the belief that it is applicable to the early stages in the teaching of *kinematics* and statics.

There can be no question that boys find mechanics a very difficult subject. Many boys who have never been delayed by Euclid, or that new geometry which is the old, are capable of working conscientiously through a course of mechanics and finding themselves befogged at the end of it. The beginner in geometry has only a few new notions to acquire, such as angles, areas, volumes. In mechanics there are velocities, accelerations, forces, masses, all notions which must be realised before any connecting laws can be assimilated, to say nothing of work, energy, and moment of momentum. If practical work has been found a help to the beginning of geometry, surely it must be even more useful in mechanics. I believe that many teachers despise experiments in kinetics because of the inaccurate results which they so often afford, and compare them unfavourably with the exact movements of the heavenly bodies. This seems to me a mistaken point of view. Experiments in mechanics are valuable not as verifying the laws so much as giving the beginner the notion of the quantity which is measured. I imagine that no boy in England is now asked to learn the definition of an angle before he has measured a few angles with a protractor. So, before giving a boy the definition of a tension, I would ask him to hook a few spring balances together and pull. The same principle applies to all of the many quantities which occur in mechanics. A practical introduction may

always precede a definition. Much of this elementary measurement may be done before the great principle is reached that force *may be measured* by rate of change of momentum. But I do not think the average boy can be clothed with the notion that force is rate of change of momentum without first going through a careful experimental course which must include both kinematics and statics, a dual garmenture, in fact. Cambridge mechanics is celestial in its source, and the heaven-born mathematician alone can grasp it. The average man needs something—

Not too wise and good
For human nature's daily food ;

and he might find it in the works of Galileo. Newton is too celestial for him ; and many intelligent Englishmen are debarred from realising the grandeur of Newton's work because they do not begin with *Terrestrial Dynamics* as did Newton. The magnificent superstructure of the "*Principia*" has distracted our attention from its solid foundations laid in Galileo's *Dialogues* ; and a real service would be done to the cause of education by the publication of a handy edition of these *Dialogues* in English.

The students of mechanics may be arranged roughly in three classes. First, there are the professional mathematicians, of whom the candidates for the Cambridge Mathematical Tripos may be taken as a type. Some few of these are "heaven-born," and need no aids in the shape of practical work. But the majority of them are apt to find their powers of imagination fail them, more especially when "Rigid" is reached. Secondly, there are engineering students to whom the practical work is an absolute necessity. They get plenty of statics, perhaps too much. I doubt if they get enough practical kinetics. Thirdly, there are Army candidates and others for whom an intelligent interest in mechanical science is desirable. This class is increasing. There are signs that a knowledge of the foundations of physics is coming to be regarded as part of a liberal education. A time may come when our superior persons will not boast of their inability to appreciate the work of England's greatest intellect.

I propose in these papers to consider the interests of the third of these classes. For what is good for the unprofessional student, whose interest must be aroused so as to bring his thinking powers into action, cannot be harmful to the budding engineer or mathematician. And quite apart from "interest," there is the necessity of making a ground-work of reality, of beginning with the *thing* rather than with its definition, which, bringing understanding, brings also "interest" in its train.

Is the subject necessarily bifurcated? Is it not possible for those who are favourably situated to take the bifurcations simultaneously? These are questions which might be asked and answered satisfactorily. But what is more important, perhaps, is to arrive at an agreement as to the

practical work which should be done, regarding the order as capable of adjustment to individual requirements.

(i) ELEMENTARY NOTIONS OF FORCE AND INERTIA.

The muscular sense must come first: and it leads us to the need for a more exact standard, just as in heat we are brought face to face with the thermometer. Much useful preliminary work may be done with spring balances. Those reading by $\frac{1}{2}$ lb. to 25 lb. are suitable for this. They may be tested with weights, loading and unloading. With the addition of a bar, as in Fig. 1, we can illustrate

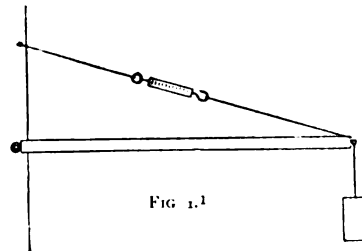


FIG. 1.

the additional strain on the muscles of the arm when the weight is held with the arm horizontal. The construction of a spring balance may be illustrated by coiling a steel wire and testing it for Hooke's law with different weights. A copper wire may also be tried in the same way, and gives a striking illustration of the elastic limit. Spring balances in tandem, hooked together, or joined by string which may be passed round a pulley or a peg, give useful illustrations of tension and of its alteration by friction. The "string passing over a perfectly smooth peg" might perhaps become less familiar to mathematical students, but it never would be missed.

Different kinds of forces should be balanced against one another. An instrument like Hibbert's Magnetic Balance is extremely useful, as it shows that the attraction or repulsion between two magnetic poles can be balanced by the force of gravity. A similar arrangement in the case of electrostatic attraction might be devised, though it would be difficult to make it give good quantitative results. Such experiments are very suggestive; and always the spring balance should be referred to and used as the ultimate standard in these measurements of force.

Few places of education possess a handy 10,000-ft. mountain at the top and bottom of which a spring balance, reading single grammes up to 1,000, may be tested with a kilogramme weight. If the experiment were tried, the spring balance might read 1,000 at the bottom, and 999 at the top; on the other hand, it might not. Naval cadets completing their education afloat may be fortunate enough to find on their ship spring balances of sufficient accuracy to show different readings at Jerusalem and Madagascar. But such ideal conditions can only be referred to with envy by the majority of teachers. It is very possible,

¹ The figures illustrating this article are taken from the author's "*Mechanics*," by permission of the publisher, Mr. Edward Arnold.

however, to examine the readings of a spring balance when it is employed in raising and lowering a weight. It is worth taking some trouble to show the return to the stationary reading when uniform velocity is obtained. For this we may employ a weight hanging from a spring balance (reading single grammes up to 100) pulled by Mr. Fletcher's trolley (SCHOOL WORLD, May, 1904) running down the plane with uniform speed (Fig. 2). It is impossible to obtain a

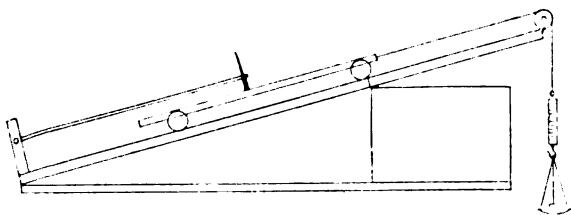


FIG. 2.

quantitative result of any value; but the chief object of the experiment will be obtained if the pupil is led to argue and criticise. The sceptic should be encouraged; he may some day make the best engineer.

The directors of the Twopenny Tube might give us some help if they would put automatic weighing machines in all the lifts. Many pennies might be spent by students in noting the difference in their apparent weight as the lift starts or stops. Dr. Routh used to recommend his pupils to let their thoughts run on the mechanics of everyday locomotion as they took their walks abroad; and an experimental course will be a failure if it does not conduce to this attitude of mind. A good deal of thought is necessary before the property of inertia, the inability of matter to start, stop, or turn, is thoroughly realised.

I can recommend two very simple experimental aids to this concept. One is shown in Fig. 3.

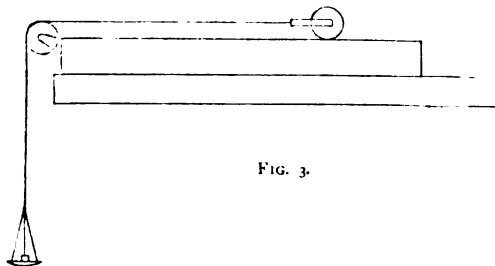


FIG. 3.

The usual inclined plane apparatus is adjusted with the plane horizontal, and the student is asked to find out what weight hanging over the pulley is necessary to start the roller, and what proportion it bears to the weight of the roller itself. If the apparatus is well made the smallness of this proportion usually comes as a surprise. The other simple apparatus is nothing but Galileo's own, with which he discovered the laws of motion. Rolling a ball down an incline without any electrical appliances for releasing the ball or recording the time may seem as dull as washing

in the River Jordan; but it is worth trying, and then it may be judged by results. Hear Galileo's own description: "In a wooden rafter about twelve cubits long, about half a cubit in depth, and three inches in breadth, let there be gouged out along the narrower side a groove a little more than an inch wide. The groove must be very straight, and, that we may have it smooth, it should be covered closely with parchment, polished and burnished as much as possible. Down this groove we will roll a well rounded and polished ball of hard bronze, the rafter being inclined by raising one of its ends above the horizontal plane one or two cubits, as we please; and the time taken by the ball in running down the full length of the groove must be noted in a way which I will explain afterwards. This must be repeated many times, to ensure from the number of observations that there should be no difference in the results, not even as much as the tenth part of a pulse-beat. The result having been established, let the same ball roll down only one quarter of the groove; its time of descent will be found to be exactly half the other time. Repeating the experiment with other fractions of the length, it will be found that the spaces travelled are in every instance as the squares of the times.

"Now for the method of measuring the time. Have a large bucket of water on a shelf, which, by a narrow tube soldered on to the bottom, pours a fine thread of water which can be caught in a beaker during the time that the ball is rolling. The water can then be weighed accurately."

Galileo's method of measuring the time gives better results than the ordinary stop-watch if the depth of the water in the bucket is attended to.

I have found that a well-cut groove in a piece of mahogany takes quite enough polish to give satisfactory results without a parchment covering; and ball bearings up to an inch in diameter can be obtained of any cycle agent, and are admirably spherical. They should, of course, be kept oiled when not in use.

If this groove is made perfectly horizontal and equal distances are marked along it, it is easy to observe the very small loss of speed of a ball starting with moderate velocity.

(ii) KINEMATICS.

Galileo's own words, quoted above, have plunged my hesitating foot into *kinematic*, if I may follow W. K. Clifford in employing the singular form, akin to *trouser*, and reminiscent of Dr. Johnson. I will proceed.

The following method of verifying the law of the squares of the times does not involve the use of any instrument for measuring time, and works perfectly well with an inclined plane only four feet long.

Divide the plane *AB* (Fig. 4) accurately into four. Procure two steel balls of the same size. Let one start from *B*, and have the other ready at *C* so that it can be set free at the instant that the first ball passes the point *E*. The two balls will

reach *A* simultaneously. This can be repeated with the plane at different inclinations.

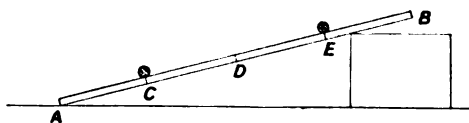


FIG. 4.

With the same groove we can obtain an experimental verification that the speed at the bottom of the incline is double the average speed of the descent. For this it is necessary to have a horizontal continuation of the groove. If the slope of the incline is gentle, it is easy to adjust the two pieces of wood so that the ball rolls on to the flat without interruption. The horizontal part must be carefully levelled, and should be tested for smoothness by rolling the ball very slowly along it either way. (Fig. 5.)



FIG. 5.

Mark off *BC* twice the length of *AB*. Let a ball start from *A*, and the instant that it passes *B* let another ball start from *A*. The second ball should reach *B* as the first reaches *C*.

For another experimental verification of the law that the distance fallen varies as the square of the time I am indebted to Mr. G. F. C. Searle. A coin is held horizontally between finger and thumb. The finger is then withdrawn so that the coin falls with a turning movement, which we assume to go on uniformly during the fall. Supposing the coin to start with "heads" uppermost. At a certain depth (a few inches) it will be "tails" uppermost, and if the hand or a flat blotting-pad be placed to catch it at this particular distance, it will fall flat and true "tails." At four times this depth it will fall "heads," at nine times the distance "tails" again. At intermediate distances it falls edgewise and rolls over.

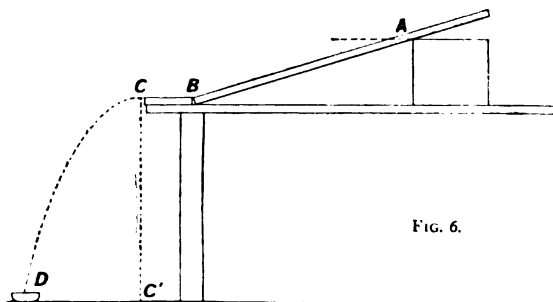


FIG. 6.

The vertical motion is independent of the horizontal motion. Arrange the inclined plane as in Figure 6, and allow the ball to roll down it and off the edge of the table. As it leaves the table it has a horizontal velocity. Another should be held by the finger and thumb close by the point where the first ball jumps off and exactly level with it. A

little practice will enable you to drop the second ball at the instant the first ball passes it. The two will strike the floor simultaneously, showing that the ball with the horizontal velocity falls as fast as the other.

The same apparatus can be used to prove that the velocities acquired in rolling down planes of the same height, but different lengths, are the same. *D* is a small box with cotton wool inside placed to catch the ball when it rolls off at *C*. The distance *C'D* is a measure of the velocity. Now alter the inclination of the plane, but always start the ball from the same height, and it will be found that the position of *D* needs no alteration.

ACCELERATION.

The notions of variable velocity and acceleration are so intimately associated with the differential calculus that it always seems to me a pity to try to separate them. Graphs may doubtless be run to death; but a space-time graph is the natural introduction to variable velocity, and here at least squared paper methods have a legitimate place. Any page of Bradshaw on which the distances of the stations are given supplies material for a graph, and the comparison of different lines is interesting. This will serve as an introduction to graphs plotted from the wavy curve traced by a vibrating paint-brush on Mr. Fletcher's trolley, which is to school-boys a most seductive toy. He has described it in *THE SCHOOL WORLD* (May, 1904), and teachers of mechanics owe him a debt of gratitude. I may mention here that the whole apparatus, including adaptations for the inclined plane and for momentum experiments, can be obtained from Mr. Cussons, of Manchester, or Messrs. Pye, of Cambridge.

THE DIVORCE OF ENGLISH AND THE CLASSICS IN EDUCATION.

By J. E. BARTON, M.A.

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THE mere utility of Greek and Latin, as a gymnastic for rudimentary brains, is an argument sound enough in itself; but since it is an argument that relies in the main upon the witness of schoolmasters themselves, it has long ceased to convince the public. Even the vague aroma of social prestige, so long associated, in the popular mind, with Greek and Latin, no longer titillates the provincial nostril. If the classics are to be effectually retained in ordinary schools (in schools, that is to say, which depend for support, not on the tradition of a wealthy class, but on the opinions of ordinary people), they must recommend themselves to public approbation on their own merits. This notion of conciliating public opinion is of course highly repugnant to the instinct of classical scholars. Classical scholars, as a rule,

prefer to regard the public as a mob of Boeotians with whose ignorant prejudice it is hopeless to contend. By this suicidal complacency they merely weaken the cause of humane learning and confirm their own reputation for ineptitude. What they ought to do is to ask how it has come about that such a public prejudice exists. The age is prolific of vulgarities, no doubt. But art continues, in spite of machinery. Religion continues, in spite of materialism. Literature continues, in spite of journalism. Nobody, even nowadays, really objects to art, religion, literature; just because everybody (in his heart) is aware that these things have value, even if he does not realise the value in his own experience. No sane person disputes that these things, for certain temperaments, are necessary elements of life. When it is perceived that Latin and Greek are necessary elements of life for certain types of intellect, the "classical controversy" will be at an end. Such a perception would long ago have been public property if classical education had been so conducted as to give the ancient classics a visible continuity with modern literature and thought. As it is, a classical education is regarded by the plain man with an odd mixture of awe and contempt—awe because there is something mysterious about it, contempt because he instinctively doubts the value of anything which is hedged about with pedantic ritual and consecrated jargon.

There was a stage of human society when quite obvious and practical things, such as the calendar and the penal code, were sacerdotally guarded, and misunderstood, in consequence, by the people. When the calendar and the penal code were at last published, everybody saw with surprise how natural and necessary they were. The publication of them was a great reform. It will be a great reform when classical education has learned to justify itself in the public eye by much the same process. At present it is quite a common thing for halfpenny newspapers to point their comments on the inefficiency of some public man by insinuating that he is privately addicted to Latin verses. Yet to be an authority on Shakespeare's Sonnets, or even to be a minor poet, is generally considered to shed a certain small halo even on a member of Parliament. The public mind, in short, draws a line between literary accomplishment and classical accomplishment. A distinction so amazing would only divert us if there were nothing to justify it. Unhappily all persons of literary feeling who know anything of schools and universities are aware that such a distinction is by no means altogether unreal. It is amazing, but it is a fact. Of the classical scholars who leave our universities with quite good degrees, only a proportion (it may safely be said) are keenly appreciative of the fresher elements in modern art and literature. This is extraordinary, seeing that the whole function of classical study is to create such appreciation. Many scholars appear to think that the whole function of classical study is to chastise exuberance of taste and inspire suspicion of what is new. Thus to set classical art on a pedestal,

while we relegate modern and contemporary art in bulk to a limbo of ignorant indifference, is utterly alien from the spirit of art itself.

The classics no doubt provide a touchstone by which we learn to reject what is purely ephemeral; but their other and much more important function is to quicken our sensibilities that we may discern what is valuable in fresh work. After all, a modern person, however æsthetic his perceptions, cannot live his life in ancient Athens. His perceptions find their natural scope in his own world. Indeed, he cannot fruitfully enjoy the classics themselves unless he is thoroughly interested in the moderns. We cannot read Vergil perfectly unless we are also uplifted by what is best in Wordsworth. Our admiration of Praxiteles is only partial if we cannot feel the poetry of a crowded railway station. Moreover, by the time a writer has so far receded as to become a classic he necessarily contains a good deal which on first sight repels because it has the air of an unfamiliar world. Richardson, and some other eighteenth-century writers, who to some of us make intolerably dull reading, were quite absorbing in their interest for contemporary readers. Why are so many boys first awakened to poetry by such a work as the "Idylls of the King?" The answer is, not only because these poems are simple, heroic, narrative poems, such as a boy can easily follow, but also because the ideals and thoughts embodied in the whole texture of these poems belong essentially to the Victorian English atmosphere in which the boy has grown up. For similar reasons, a literary boy of eighteen inclines to Stevenson more naturally than to Addison, even where both are dealing with serious subjects.

To adjust our ear to the utterance of a past time, however classical, requires a rather complex mental effort. The effort is salutary, of course, but cannot be prematurely forced without harm. It is in the obvious and natural order of things that a boy should feel style in an English writer before he can detect it in a Latin and Greek writer. Our practice in schools, for the most part, ignores this utterly. We attempt to communicate a sense of the more delicate terms in Latin prose to boys who have never been seriously encouraged, either in reading or in composition, to notice and admire a similar kind of thing in English. This reversal of the natural process in literary development not only increases the difficulty and narrows the result of teaching, but does a grave mischief. Boys of an imitative faculty pick up, from sheer drill, the knack of turning out that kind of prose or verse composition in Latin and Greek which gains approval and marks from some examiners, but really stands for little in the way of genuine literary feeling. A packed mosaic of idiomatic phrases, collected not so much by genuine excavation among the ancients themselves as from study of model "versions" by contemporary scholars, is an utterly different exercise from the natural writing of Latin as scholars wrote it in the days of Milton and Bacon. The turning of English into Latin prose is often and justly extolled as a test of

mental clearness and sequence; but how far the clever version of a prize boy stands for real appreciation of Latin style is a very doubtful point indeed. If an English boy cannot write English with at least some promise of good style, it is hardly safe to infer much from his success in artificial Greek and Latin exercises.

Both among Sixth Form boys and among undergraduates it is notable that the more intimate absorption of the classical ideal, the finer gust of classical art, has little connection with peculiar excellence in what is called "scholarship." Here, in fact, is the astounding paradox: that men of pronounced literary feeling and interests, brought up in classical schools where most of the time was devoted to classical books and composition, will usually inform us that they received at school no direction whatever towards art and literature as a whole, or even towards the literary aspect of the classics themselves. Most published translations of classical writers by professional scholars will serve to illustrate only too well how slightly the teaching of Latin and Greek, in school practice, has been affected by the literary tact which in English can only be acquired by study of English literature. The established mode of translating a classical poet into English prose is to turn him into a string of what, by a quaint convention, are branded as "poetical" words and phrases; words like "erst-while" for "long ago," "deem" for "think," "fell" for "fierce," and so forth—all the stock-in-trade, in short, of the dull but reminiscent poetaster. Such conversion of living Greek or Latin into dead English is an insult to poetry and an injury to language.

Freshness is the essence of literature, and literature is continuous. If a man admits that he cannot feel the charm of Herrick, I do not believe him when he says that he admires Catullus. Nobody can impart to English boys the literary spirit of the classics unless he is imbued with the spirit of English literature. Textual knowledge and ingenuity are valuable enough, but if these alone are the faculties by which classical teaching is carried on, we are diverting the classics from their true purpose, and turning them into a substitute (perhaps an inferior substitute) for natural science. Classical teaching, in brief, is nothing if not literary teaching; and literary teaching is nothing if not the communication of a personal enthusiasm. This personal enthusiasm is only to be kindled and kept alight by pervasive and continually freshened study of the best things. Most of us who are responsible for the literary education of boys from the age of fifteen upwards would perhaps occupy a brief leisure to more purpose in widening our appreciation, say, of the English poets and humanists than in heightening the already adequate pyre of edited classics with elementary notes.

Much could be done if the teaching of Greek and Latin and the teaching of English were more effectively interwoven. On the modern side it

is inevitable that English should be separately taught, though even there, of course, the pupils gain immeasurably if the teachers have a classical tincture. But on the classical side the divorce of English and the classics is often achieved to an extent that would be unthinkable if we had not seen with our own eyes. The "composition master," as he is sometimes called, a teacher employed exclusively in virtue of his considerable (and usually quite recent) attainments in pure "scholarship," is an institution that well typifies the system which it is the presumptuous function of these remarks to condemn. Under this system, English culture and classical knowledge tend to occupy quite separate compartments of school life. It is implied, for example, that Cicero, being a model in respect of diction, is an author in all points to be admired fervently and finally, though most grown-up people, I suppose, would agree that for sheer force and calibre of thought Tacitus, say, is a whole plane above Cicero. If people disagree here, the very disagreement strengthens my point. Vergil and Ovid, again, are intellectually as wide apart as Keats and Pope. For the Sixth Form boy, taught as we usually teach him, Vergil and Ovid are models respectively for hexameter and elegiac verses, and there is an end of the matter.

This, some will urge, is as it should be; the schoolboy, they may say, will learn to draw his literary distinctions later on. That, indeed, is just what he does, if he has a turn for literature; but the distinction he is apt to make is a fatal one for the classics. His Greek and Latin books go on the top shelf and he cultivates exclusively a taste for what is modern. One is always meeting University men of wide culture, who, though by no means ill-equipped in Greek and Latin when they left school, turned by preference to modern literature, took in consequence poor classical degrees which in no way represented their intellectual merit, and ever after have been lost to our cause in the "classical controversy." "The schoolmaster devitalises literature" is an opinion lately uttered by a popular paper in quite an excellently-written essay on the reading of books. And this opinion is general among the best English journalists and men of letters, themselves largely the product of our classical system. Such an opinion could not prevail among such people had it been generally recognised that in upper classical forms the desideratum is not so much linguistic dexterity as an atmosphere of cultured feelings and interests.

These remarks have been intended simply to present a point of view. Hence their apparent vagueness and lack of "practical" suggestion. The point of view, however, must be accepted before we can get any further. Assuming that the point of view wins assent, what, of course, is needed first is a much stronger emphasis on English teaching from the lowest forms upwards. "A little English" (like a little football, a little preparation duty, and other littles) is too often

relegated to the batch of minor "recommendations" which an assistant-master is expected to offer—the mere outskirts, as it were, of his magnificent versatility. This is distinctly quaint, seeing that English calls perhaps for more special qualifications in a teacher than any other subject. The odd thing is that such a system should prevail when every decent staff is fairly certain to include somebody who makes a private joy of English literature, and could teach it keenly if utilised and encouraged.

In the upper forms, it follows naturally, discriminate English reading by boys themselves should be encouraged by something more definite than the existence of a school library, vague exhortation, and an occasional holiday task in the shape of a Waverley novel. Every literary master, it is to be presumed, will have his peculiar tastes, and if his classical and English teaching is to be an instrument of general culture, he will have to supply his boys with such a selection of English books as will fit them to receive his peculiar impress. Literary and general notes, however artfully contrived to stimulate rather than to cram, are useless unless the boys themselves have a basis of chosen and digested reading. To teach a boy the language of criticism while he is wholly unread is to achieve only a nauseous hybrid of prig and parrot. But if a whole set of boys can be got to read privately one small but varied selection of English books, genuine fruit is likely to spring from the notes, essay teaching, *obiter dicta* and what not, in which the master indulges. It is common, of course, for schoolmasters to assert that lists of books are no good because boys will never read them. As this assertion happens to be untrue, nothing more need be said on the point. It may be admitted, however, that boys will not grow keen on literature unless they receive no end of quiet and persistent encouragement. But if one set of boys can be induced to read, to enjoy what they read, and to talk about it among themselves, they hand down the tradition to their successors, and the atmosphere is soon formed.

We are apt to be too sceptical of a boy's capacity in this matter of English reading. If anybody has ever tried the plan of having informal little symposia of his boys (in their own time) to read small effusions of their own, and to hold a sort of apparently free but really guided colloquy on things in general, he will have observed one very queer but instructive fact. This is, that boys on such occasions read essays about ten times as original and well written as anything they will produce in the way of ordinary school work. One discovers all sorts of shy sensibilities and interests. Boys, like savages, are very reticent of their higher meditations. In friendly, emulative intercourse they expand out of knowledge. Embryo thinkings on art, politics, social questions and the like, put forth a frail blossom which could never appear amid the routine of school or the preconcerted noise of a school debating society. To give body and coherence to such thinkings is the supreme

privilege a teacher can enjoy. A teacher nowadays who clips his own wings, in fear of soaring beyond the comprehension of a dozen intelligent lads of seventeen brought up in a large town, is obeying a fond delusion. Taste in literature and the rest of it, runs the platitude, cannot be manufactured. The point is, that germs of such taste lurk everywhere in youth of that impressible age; germs easy of starvation, but only awaiting detection and culture to produce the perfect disease. If we are to judge the receptivity of a boy in matters literary and æsthetic by his skill in reeling off elegiacs, the sooner classical teaching ceases the better. The question is not, "Can he write Latin verses?" but "Do his own Latin verses make him ill?" To write Latin verse is worth while, if only to produce this despair; to write them tolerably. *pauci, dis geniti, potuere.*

Schoolmasters have a wholesome dread of turning out what are called "dabblers." Dullards are turned out by the score, and schoolmasters accept this with resignation; but the notion of turning out "dabblers" simply horrifies them. The encouragement of general reading and interests, of any sort of discursiveness in fact, is sincerely looked upon by not a few teachers as dangerous to the moral character, and inconsistent with the British watchword of "thoroughness." This word "thoroughness" is made to signify the grind of quick and various temperaments in a mill of uniform and often ungenial exercises. The steadier and stodgier the grind, the more "thorough" (one would suppose) must be the results. To condemn as superficial everything which is versatile or lively is the invariable refuge of dull minds. If the phrase "thoroughness" has any meaning at all as applied to literary teaching, it means the establishment of a vital contact between the spirit of what is read and the spirit of the boy who reads.

This contact is achieved in innumerable little ways. Not all boys are susceptible of purely artistic feeling; but there are countless sidelights, other than literary, which may visualise a text, so to speak, to the mind of an average boy. Most boys, however intelligent, are unlikely at the age of fifteen to perceive the mystical charm of poetry as it haunts the Sixth Book of the *Æneid*. But the attention of any boy is likely to be quickened by an attempt to illustrate from that book, as one goes along, the primitive Aryan ideas of a future life and the soul. Bits of quite scientific and modern anthropology can be worked in simply and briefly; and boys are pleased and astonished to discover that a book of poetry can have a meaning for the historian of human ideas precisely as the rock has a meaning for the geologist. Direct study of the text is concentrated, not dissipated.

These elements in classical teaching, it is clear, must come from the teacher himself; and if the teacher be also concerned and acquainted with the English reading of his boys—if the whole plan of his teaching be built on the truth that all literature, all art, is continuous—he is able to fructify

his purely classical reading in a larger way. And the purely English teaching is no less fructified. The literary advantage of reading such authors as Milton and Vergil concurrently is too obvious to need remark. What may perhaps less obviously occur is the practical advantage enjoyed by a teacher who reads both with the same boys. English reading in class is so curtailed by our Procrustean time-tables, and so fettered by examination requirements, that we welcome every small chance of giving to set English books a freer turn. Such chances occur. Ordinary classical work may fill most of the time, but in the time of individual boys there are little crannies where a bit of English reading can be inserted fruitfully if the man who takes the English is on the spot to answer a question or drop a fertilising remark. Each boy in the course of a term or two may thus contrive, without felt strain, to supplement his school edition of Milton (say) by something less snippety; something of a critical or of a biographical kind, according to his own turn. This is likely to tell on his reading of the poet and will relax, at any rate, the bondage to "introductions" which often is so abject.

Although by professional habit we revile examinations, it is only fair to reflect that examinations are what we have made them. Not all examiners are unbending Molochs. Some are pleasantly open to recognise more elastic methods of English teaching, and if teachers in body gave a lead, examination papers and systems of marking would soon follow it. As it is, things are better than they were. More encouragement is given to study of texts as bodies for delight, not corpses for dissection; and of authors as human beings. Pending the solemn day when there shall be no more examinations, this is much. Even the "notes" to many school editions are incredibly improved of late years; they are less defiled by mechanical interpretations and etymological jargon, and only need cutting down by two-thirds or so to become positively useful to boys themselves.

For school English, in fine, as for school classics, there is abundant hope, provided we can emphasise the literary, and, above all, the continuous aspect of both. The word "continuous" has appeared with (I fear) tedious iteration in these jottings, but really it expresses the gist of everything. Continuity of mind is, after all, the ultimate test of education. Education cannot alter a mind in grain, but it can and ought to give a common life to the faculties. Even in the more exact domain of science and mathematics, some are perceiving the evils of a pigeon-hole system. On the literary side, things are now critical. Many perceive that; and indeed nothing here said has the faintest claim to be called new. *Ne tanto cessemus cardine rerum.* The only aim here has been to raise a thin voice of protest against the unnatural divorce of classical and English studies, and of prayer that they may soon be fully awarded, in school, those conjugal rights which in the world of culture, outside the purely scholastic precinct, they naturally enjoy already.

BALANCES AND WEIGHTS IN THE SCHOOL LABORATORY.

By REV. A. H. FISH, B.A., B.Sc.
Arnold House School, Chester.

(Continued from p. 287.)

WHEN we require to use weights of less than 5 milligrams, the Beginners' balance ceases to be of service. This is about the limit to which a balance can be depended upon, if it is exposed to draughts and currents of air; and, although this particular balance may, by the addition of a pointer and scale, be made to show a difference of 1 or 2 milligrams, such indications are of no value unless the balance be enclosed in a case, and for this it is not suitable.

Hence for the next higher class we require a protected balance. The need for such a balance arises, in my experience, when the class, having worked through a course of experiments on air, water, carbonic acid and combustion, and having made some determinations of densities of solids and liquids, and perhaps of the latent heat of water and steam, approaches the task of determining approximately the ratios of the masses which take part in chemical reactions, the equivalents of the commoner elements, the making up and use of simple volumetric solutions, determinations of specific heat, and the use of the copper voltameter.

It is also a great advantage for the student at this stage to repeat some of the earlier quantitative experiments, endeavouring, with better apparatus and more precautions, to obtain greater accuracy. One might instance the determination of the ratio of H to O in water by the copper oxide method, an experiment which requires great care, and the determination of CO_2 in marble or in sodium carbonate by loss of weight when acted on with an acid.

To revise a few results in this way is of considerable educational value. It helps to keep the beginner from thinking of quantities in chemistry and physics, as if our knowledge of them were as determinate as in counting marbles or doing money sums.

After trying several types of cheap balance, we have settled down to what is known as the "open-beam" type, with agate knife-edges and planes, arrestments for stirrup suspenders, and beam-support. These may be obtained without cases for £1 12s. 6d. to weigh 100 grams in each pan, and for £1 15s. 6d. to weigh 250 grams.

The former is sufficient for most experiments in the chemical laboratory, and on the whole I prefer it to the larger size. It is an advantage to have one or two of the latter, but generally speaking, the Beginners' balance is quite sufficiently delicate for apparatus over 100 grams, or too large for the last named.

These balances may be obtained in nice cases, with drawer and even rider-apparatus, for about £3 10s. In our case, however, we had to consult

economy, and fitted ours with the cheap cases costing 8s. 6d. each

When this is done, however, the levelling screws must be removed from the base-board of the balances and transferred to the cases—the base-boards being firmly screwed to these. The arrangement, which I have more than once seen in use, of putting the balance with its levelling screws inside the case is most objectionable from the point of view of steadiness.

Our balances stand in the middle of the laboratory on a specially made table. Each pair of boys has simply to turn round from the working bench to their balance. There is no crossing or going round. For a small laboratory this seems the best arrangement. The table is very free from vibration. The levelling screws fit into brass cups—cabinet-makers' screw-cups—and these answer well. A round stool is provided for each boy. It is very desirable that boys in a laboratory should have a means of sitting down, not only for weighing, but for drawing, writing and other purposes. It is cruel to compel boys to weigh and draw while standing up at low tables.

Next, with regard to the sensitiveness of these balances; this should be carefully determined in each case, as after some use it will vary from balance to balance.

The standard weights, or a carefully corrected set, should be used for this purpose, and the deviation determined with each load. It is convenient to have some pairs of weights which have been made as nearly equal as possible, say 2 of 10, 2 of 20, 2 of 50 grams, for this purpose. An excess of 5 or 10 milligrams is then added to the left-hand or load pan and the deviation determined.

The maximum sensibility is generally found to lie between 10 and 20 grams. It varies according to the condition of the balance, but it is quite possible to have a deviation over a considerable range of approximately 1 scale division for an excess of 2 milligrams, and it is rarely less than 1 division per 4 milligrams.

Hence to obtain "equal vibrations by adding weights" we must use the milligram weights, and even then must neglect differences of from a quarter to a half scale division. It is, however, generally agreed that the milligram weights should not be used, so that on these balances we must either have a rider or we must use the "method of vibrations."

Now it is quite possible, and I have seen it recommended, to use a rider, moving it about on the arm with forceps or a piece of wire. The method is, however, extremely troublesome and unsatisfactory. Even if a rider arm be made, or a balance be bought furnished with a rider, the method is not a good one for boys at this stage. Any rider-mechanism that does not work very exactly is a nuisance. Hence we are thrown back on the method of vibrations, which is indeed the simplest, the most accurate, and the most educational. It necessitates careful observation of the pointer and accurate estimation of the divisions,

and thus furnishes a training which will be subsequently very useful in the physical laboratory. And it introduces the beginner in an easily intelligible manner to a method of interpolation, the accuracy of which he is always in a position to test.

I have, however, always found it difficult to teach boys to weigh by vibrations by the ordinary method in which the deviation for 1 centigram is determined in the case of each weighing. Even supposing the point of equilibrium for no load to coincide with the zero of the scale, they have to make two observations of the mean position of the pointer as well as the calculation. It is better to introduce them at once to the shorter and simpler method. For most of our balances with an ordinary load we can assume that a difference of one scale-division corresponds to an excess of 2 milligrams approximately. So after letting a boy weigh a few times with the milligram weights, I sit down beside him, tell him to take off the milligrams, determine the deviation, and add 2 milligrams for each scale division. He finds this to come very nearly the same as his previous weighing with the milligram weights, and as a rule after a few trials he "catches on" all right. By presenting the method in this way the pupil has an inducement to use it, because he sees that he gets the same accuracy with much less trouble, whereas the fuller method gives him considerably more trouble than he had in using the milligrams. The amplitude of the vibration in the case of these balances diminishes very slowly, and there is really no need at first to bother the pupil with the method of getting the mean from three "turning points." This may come later; for the present, two are sufficient. As a matter of fact, the beginner does not get more accuracy at this stage by observing three. But it is desirable to take the vibrations rather small, not more than three scale-divisions. This is especially the case with the heavier weights. In this case the mean obtained from the longer vibrations often differs considerably from that obtained with the shorter. With weights above 50 grams the balance should be allowed to swing several times before the mean is determined, and it is when making these weighings that one may generally take the opportunity of explaining the "three turning-point" method.

The result of a considerable number of observations has been to show that the majority of these balances when carefully used have a sensibility varying throughout the load of 2 to 4 milligrams per division, that for weighing not exceeding 20 grams this may be taken as approximately 2 milligrams; from 20 to 60 grams as 3; and from 60 to 100 as about 4. The maximum sensibility lies sometimes lower and sometimes higher than 20 grams; in two of the balances it is at very nearly 10 grams.

There is no arrangement provided for varying the sensibility, but it may easily be increased by putting small washers of card or metal under the thumbscrew which fastens down the pointer. We have not often, however, found it necessary

or desirable to do this, as the sensibility to which the balance has been adapted by the maker gives the best results throughout the whole range. If, however, a balance is intended only for weighing below, say, 30 grams, it is sometimes an advantage to adjust the sensibility so as to average 2 milligrams per division over this range. However, 3 or even 4 milligrams per scale-division gives, if the divisions are read to tenths or even to fifths, sufficient sensitiveness for the purposes for which these balances are used. We cannot depend, of course, upon the fourth place, but we may in most cases do so for the third, which is more than can be said for the plan of weighing with the milligram weights. As a matter of fact, however, most of the weighings made by this class lie below 20 or 30 grams, and here we may without much error interpolate on the scale of 2 milligrams per division, weighing therefore to about 0.2 milligrams. In the cases in which the bodies weighed have more mass than these, other sources of error which come in make it useless to think of an accuracy greater than to the third place. So that on the whole we get the greater accuracy where we want it most, as in the weighing of small quantities of salts for analysis, crucibles, small tubes, and precipitates.

After a boy has used this method for a short time, he will probably of his own accord determine the sensibility of his balance from time to time, and if he is in any doubt about it, and wants to be specially accurate, he may be advised to use the ordinary method of determining the exact difference for one centigram for the load on, and interpolation accordingly.

I am quite prepared to find this plan of beginning with the shorter method and proceeding backwards severely criticised as unscientific. I should probably have called it so myself ten years ago, but I am gradually learning in this and other subjects that the most scientific and logical method is not always the best way of approach for the beginner, and that we may sacrifice a great deal of logic to gain an intelligent interest. It is of course open to any one to say that the use of such balances and such methods is altogether unsuitable to boys of the age in question. With a very ordinary class of boys to deal with, I have not found it so, and in any case if we have balances, we must determine our final place in some way, which shall not be open to the charge of being slovenly as well as unscientific.

Further, it seems to me a very good thing that a boy should get to realise early that all instruments have their limits, and that some observations require and repay more accuracy than others. It is a painful thing to see a boy spending a quarter of an hour with a rider in endeavouring to get the exact weight of a flask or other apparatus, which is perhaps changing in weight all the time, or of a crucible which is being used for an experiment in which errors of several milligrams can hardly be avoided.

It may be worth while mentioning one or two other points of interest in connection with these

balances. As a general rule, the pointers are hardly fine enough at the ends to enable the scale divisions to be estimated accurately to tenths, or even to fifths. We remove them and file the ends flat and thin, so that they just cover and no more the lines on the scale.

We also provide two or three ordinary reading-glasses of about 2 in. in diameter. The balances are so placed, that, when the handle of the glass is placed at a mark on the table edge, the scale is in focus, and just about fills the field. In this way parallax is avoided and the estimation of the tenths made very easy and accurate. No one is obliged to use a glass, but there is generally a competition for them.

With these light balances it is well, on commencing a weighing in which the highest accuracy is required, to determine the position of the pointer for no load, and if several weighings are to be made it is an advantage to bring it to the centre of the scale; if, as is usually the case, it is not more than half a division or so out, this is best done, while the balance is swinging, by slightly altering one of the levelling screws. This plan saves opening the case and disturbing the beam. After a little practice it becomes very easy. For small differences there seems no objection to it. If the differences are too large the adjustment by means of the screws at the ends of the beam should be made by the teacher. At the end of the weighings the position of the pointer for no load should be again found. My own experience has been that boys take great pains over their weighings and soon become expert; also that they are careful of the balances.

Most errors made by beginners are due to errors in counting, or in the addition or subtraction of their weights. With a few boys—about one in ten—this is often persistent. When it arises from counting the weights, it is often impossible at the end of an experiment to detect or rectify it, as the weighing cannot always be repeated. I am not fond of having the whole experiment repeated, unless there seems to have been real carelessness. Such boys should be given four or five of the pieces of quartz or other objects of known weight, and asked to weigh them and combine the results, *e.g.*, $A + B - (C + D)$. If the final result is not sufficiently near, the error, whether in weighing or arithmetic, can be pointed out at once, and a fresh combination set, till one or two results have been brought up to the required correctness. It will generally be found that in doing these the boy will have acquired that power of steadily concentrating his attention on his work and that confidence in himself, which were probably the missing factors.

With regard to the weights used for these balances a few words must be said. A trustworthy set of weights from 50 grams downwards could hardly be procured till recently for less than 25s., and this is a prohibitive price. During the last three years, however, I have been supplied with such weights at a cost of about 10s., which have generally required little correction. Now

and then a weight, generally among the larger ones, is found to be faulty, but this does not often occur now. Still it is as well to test them. This, if thoroughly done, is of course a tedious and difficult process. We are satisfied with comparing each set with the standards, using only one pan, on the best balance. Of course, in this method the inequality of the arms affects the comparison, but a balance may generally be found in which this inequality is very small.

The makers have lately taken to supplying the fractions in a new and convenient form, but made of aluminium. I must confess to a dislike to the use of this metal for the purpose; it is too soft, and as a matter of fact, the weights are scratched by the brass forceps every time they are used. As before mentioned, some boys prefer to keep their old weights, but as a general rule the more attractive appearance of the better set, and the fact that if their old weights are in good order they can sell them at nearly the same price as they gave for them, are sufficient inducements to obtain the new ones.

With weights from 50 grams downwards most weighings can be made. For weights above 100 grams it is only necessary to provide a few additional weights of 100 grams each. These are compared with the standard and kept for common use. If, in addition to these, a pair each of 1,000, 500 and 200 grams be provided, the laboratory is sufficiently equipped for most work which is likely to be done. The chief use of these larger weights is for graduating or calculating flasks for measuring purposes, and it is therefore as well to have them fairly accurate. It does not cost much to have them verified at the National Physical Laboratory, but in that case they must be of the best class, and are expensive. If, however, the laboratory possesses one complete standard set, and a balance weighing to 1,000 grams, cheap brass weights are quite good enough, as they can be compared from time to time with the standards.

As this article is written largely from the point of view of schools, in which economy must be practised, nothing need be said of the more accurate balances, weighing up to 1,000 grams, but I shall be content to recommend one which for over ten years has done duty for all but the most exact work of this kind in this laboratory, and which is quite sufficient for school purposes.

This is one of the balances advertised in dealers' catalogues as "Pulp and Bullion Scales." They have enamelled iron supports and aluminium beams, and though cheap are thoroughly well made. Ours cost only £3 without a case. Unless, however, it can be used in a place where draughts are non-existent, it should have one. This, if purchased, costs almost as much as the balance. We made ours with glass sides and ordinary folding-doors for about ten shillings. The balance will carry 3 kilos., and with care will show an excess of 1.2 centigrams with a load of 1,000 grams in each pan. It is a thoroughly well made and trustworthy instrument, and has been

exceedingly useful to us. Among other uses it is an excellent model for showing the general mechanism of the balance, as it can be taken easily to pieces, has all the usual movements and adaptations, and is provided with arrangements for altering the position of the knife edges and adjusts the sensitiveness. To get the best results the end of the pointer should be filed flat, and the sensitiveness adjusted for the purpose in hand. The knife edges and planes are of steel, and the balance should not be kept in the laboratory, unless the teacher has sufficient disregard for prejudice just to rub all the steel parts occasionally with a trace of vaseline. The sensitiveness remains quite sufficient for the purposes for which the balance is likely to be used.

Another very useful piece of apparatus of this kind, which may be kept anywhere, is a pair of what are known as druggists' scales (French pattern) carrying up to 1 or 2 kilos. in each pan. Either of these, if proper precautions are carried out, is sufficient to show that the graduation of most commercial litre flasks and measuring glasses needs correction. A set of cheap weights from 1000 grams to 1 centigram should be corrected by the Standard and reserved for use with these balances.

Little space is left to speak of the verification of volumetric apparatus, flasks, burettes, pipettes, and measuring glasses. With regard to flasks my experience has perhaps been unfortunate, but it is that in many cases they are, as sold, only approximately correct. An error of quite 1 cc., excess or defect, has not been uncommon in litre flasks supplied to us. In making the determination, great care should be taken. The water should have been distilled in metal apparatus, and have been subsequently well boiled in a tin-lined vessel. The temperature should be ascertained by a thermometer, the correction for which at 15° has been carefully ascertained, and allowance should be made for the displaced air. In the case of a litre flask this amounts to more than 1 gram. With regard to the necessity for making this last connection, some difference of opinion appears to prevail. It is not perhaps so important that it should be made as that some uniform agreement should be arrived at among teachers as to whether it is to be recognised or not. That a great deal of uncertainty or worse than uncertainty prevails with regard to it may be judged from the fact that in one of the best English text-books of quantitative analysis directions appear to be given for weighing the litre of water by the method of substitution in order to eliminate the necessity for correcting for the displaced air!

As every one knows, two different litres are in use: Mohr's litre, *i.e.*, the volume of water which at 15° C. weighs 1 kilogram, and the standard litre, which is the volume of water which has that weight only at 4° C. At 15° C. this weighs only 998.07 grams. Each system has its advantages, which need not be stated here. The point to be insisted on is that the teacher should be quite clear which of the two he is using. Flasks may now be

obtained standardised at the National Physical Laboratory. Their circulars say: "The statement that the volume of a one-litre flask is correct means that at a temperature of 15° the volume of the contents of the flask is the same as that of a kilogram of water at a temperature of 4°." Their weighings, it must also be remembered, are "reduced to weighings *in vacuo*."

A considerable number of the quantitative experiments usually performed by a class involve measurement of the volume of a gas by means of the water displaced. I have found it most convenient, in cases where this does not amount to more than 1 litre (and it need never do so), to let the boys weigh the water. As the experiments usually take place at a temperature not very far from 15° C., no correction on this account need, in the majority of cases, be introduced. The method is less messy, takes less time and is more accurate than that which involves measurement of the water in a measuring glass. The French scales referred to above are very convenient for this purpose. The water is driven over from a wash bottle into a counterpoised beaker or flask, and the volume obtained at once forms the increase of weight.

Among many minor points which experience has suggested, I would mention the use of the reading glasses referred to above for the purpose of reading volumes of water, &c., in flasks and burettes.

Of balances of a higher class a word or two must suffice. One good balance, say an Oertling or Bunge, should be provided, and used by the teacher only for standard and reference purposes. This will cost at least £10 or £12. Two others of a less expensive kind will suffice for advanced pupils. These should not be kept in the laboratory, but should be in a separate room, museum or store-room, and on the ground floor. Boys, who have learned to weigh as recommended above, will have little to learn in using them.

On two other points of general interest I should like to express an opinion. They relate to discipline. Boys have always been quite free to talk in my laboratory, and in the case of all but quite junior classes they are often sent there, and left there, in moderate numbers, without supervision. The only transgression is what we call "fooling," and the only penalty expulsion from the laboratory. The boy who "fools" is regarded as unsafe, a source of danger to himself and others. Very rarely indeed—not more than once in two or three years—has it been necessary to put this penalty into operation, but in those cases there has been no remission. The boy has not entered the laboratory again during his stay at the school.

Lastly, with very few exceptions, nothing is locked up. There is practically nothing to prevent a boy from meddling with anything in the laboratories. During the last ten years I can only recall two cases, in which anything of the kind has been traced to boys working in the laboratory. On the few occasions on which mischief has been done, it has been traced to the untrained curiosity of

visitors, attendants, or outsiders, and if I may counsel younger teachers with regard to such annoying occurrences, I would say, "Never accuse your boys, until you have exhausted all possibility of a meddling or careless outsider." I believe this experience to be general in properly conducted laboratories, and I mention it as one of the highest possible proofs of the moral value of laboratory training.

METHODS OF MARKING.

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ENGLAND is the home of marks, marks as used by the schoolmaster, that is to say. It might be better if boys would work without needing to have their position in form recorded in order of merit—the aim and object of marks! As, however, the custom has taken firm root, it is right that the means employed to attain the end should be well adapted to the purpose. Is this the case? Are not bad systems of assigning marks used too often, and still more frequently ridiculous plans of adding together marks from various sources, or of combining set marks with form marks?

The subject may be most conveniently treated in two divisions: (i) mark-giving; (ii) making up a form order.

THE GIVING OF MARKS.

(i) The award of marks is the easier process of the two to arrange justly. There is perhaps only one system that is hopelessly wrong, the old-fashioned "place-taking," that is, making a class stand out to be questioned, moving boys up or down according to their answers and giving the "top" as many marks as there are boys in the form. It often happens that by a lucky fluke some boy comes with a jump to the top at the end of the lesson and gains twenty marks or so, when his work is only worth a tenth of the reward it obtains. Even if this does not occur, the system is still rather like a lottery and affords great facilities to the master to send down a boy for a breach of discipline in a competition intended to test his work—an obviously unfair proceeding—and the top boy cannot rise, his only movement is downwards. A new hand, who adopts the system of marking by places, is apt to fancy that he gets more out of his form than by a system of questioning individually without place-taking, because answers come rapidly and boys seem keen. This is quite true; the moving about and the little excitement created by winning places stimulates a class, particularly one of young boys.

In such a case, instead of the old plan, let the teacher use the *endless-chain* system. The class stands out in a given order, the same on each

occasion, at the beginning of the lesson. Till boys are accustomed to the plan it is best to make them number down—the top boy beginning at one—and remember their numbers. A few figures chalked on the wall may be useful to keep the form in position. Each boy starts with (say) an imaginary ten marks. At the end of the lesson, boys number down and the difference between their first number and their last, added to ten or subtracted from it as the case may be, gives their total marks. Thus: A began at 8 and ends at 5, he gives up 13; B began at 11 and ends at 22, he gives up 0, or -1, if minus marks are recorded.

As the chain is endless, a boy may go from his original number upwards and work round till he completes the circle, gaining as many marks as there are boys in the form + his original 10; he may even go round more than once. The circle is imaginary, so the class may stand in a row, if space is limited. This excellent system deserves more recognition than it enjoys; it has its own advantages as well as those of the older plan, of which it avoids the unfairness. The totals can be divided down when entered, if they run very high. Sometimes it is well to limit the highest possible mark to once and a-half round, and not to allow a jump of more than ten places.

Good as the endless chain is, it will probably be used only in junior forms. Upper forms require more serious treatment and may resent place-taking.

MARKING WRITTEN WORK AND VIVA-VOCE ANSWERS.

So far as paper work that the teacher looks over is concerned, marking cannot well go wrong. A conscientious corrector will assign marks equitably and the result will tally with the proportionate value of the work done. It is less easy to mark *viva-voce* answers. All that can be done is to allow so many marks for an answer, to make each question of the same difficulty as far as possible, and to mark by "impression." It is often advisable to have a few questions answered on paper. The correction of these is a matter of minutes, is a good test, and, serving as a counterpoise, insures a correct result, when all the marks are added together.

While examination papers, essays, proses and the like must be corrected by the master, the written work of lower forms can often be marked by boys themselves, if they are well looked after.

It is important that mistakes should be brought home to the perpetrators at once, and that they should correct what is wrong. An exercise carefully marked, out of school, by a master often receives scant attention when it is returned. Work given back must be gone over with the class sooner or later. So, if the following plan is adopted, marking as accurate as the master's own is assured, correction of mistakes is exacted, time is saved and the value of the work ascertained before the lesson is over—often a great gain.

Collect the exercises and proceed to dictate a fair copy. While doing this it is possible to look

through the work, marking most of the mistakes, explaining difficulties—with plentiful use of the board—questioning boys and helping them to understand where they have gone wrong. Make this writing of the fair copy a regular drill on the exercise.

The fair copy once written, the partially corrected "home-work" may be returned and marking begin. Boys do not correct their own work, for it is easier to discover others' mistakes than one's own. Allow so many marks for each sentence according to its value, go through one sentence after another and have the marking done on the "destructive" method. If the work has not been too hard for the class and has been previously explained, it should be so nearly correct that boys can manage to mark thus under supervision. It is always possible to glance over the marking when the work is collected finally to insure accuracy.

To mark a said lesson in which it is impossible to put on all the class, keep a special column in the register, mark those boys who "go on" each lesson till the column is full. More than one column can be kept going, if thought right, so that there can be no fear of a boy marking time because he thinks he has had his turn for the round. Or the same boy may be "put on" for more than one lesson, but only marked once, so as to maintain proper rotation of marking.

Many modifications of the system will suggest themselves. One useful addition is—to pass questions round the class, marking the answers in special columns, or letting the boys keep their own marks till the end of the lesson, and entering the total. Another variation consists in giving a few questions to be answered on paper, so chosen that boys can correct each others' answers. Variety is important, for it must be borne in mind that some boys are better "on paper" than others, so a due proportion of verbal answers and of written work must be observed.

It should perhaps be mentioned that "constructive" marking is giving marks for what is good, "destructive" marking taking off marks for what is bad; the former records one's impression of the value of one prose compared with another from the same lot, the latter punishes faults by deducting from a fixed total.

An easy way of recording marks and of keeping a running total is afforded by the use of the "Graphic Mark Book and Reducing Scale."¹ The entering of marks may take a trifle longer in this mark book, but the delay is more than compensated by the fact that every boy's position is shown at once without any adding up at all.

The total number of marks earned during the week for each subject should be posted in the classroom in which the boys work. It is as well to fix a standard for the top boy of every list, so as to maintain a due proportion; but do not put at the top "possible marks" = so much; it tends to priggishness!

¹ Marsh and Ord, Educational Supply Association, Holborn, E.C.

MAKING UP THE FORM ORDER.

(ii) The methods of assigning marks being settled, we may proceed to discuss what is to be done with the sum of their weekly totals when form orders have to be made out.

It may be postulated that there can be no satisfactory combining of set marks with form marks to evolve a form order. The numbers in sets and forms may not tally, competition differs, higher sets may be "bonused" to raise the marks above those of boys in the same form but in lower sets, and combination of the whole is manifestly unfair. It is really more satisfactory to publish orders in sets, apart from orders in form subjects, than to employ a plan that involves what amounts to "faking." As the custom prevails, however, those who are obliged to make out such orders may be helped by a few remarks.

SCALING MARKS.

Lists of marks often have to be scaled. In the case of awkward numbers the non-mathematician will be saved much time and chance of error by the use of the sliding scale known as the "Harrow Mark Reducer."¹ When employed the scale is set with the highest mark opposite the desired standard and the corresponding numbers can be read off, one by one in the new scale, for the whole series.

If, as should always be the case, it is necessary to bring both the top and bottom mark to a fixed standard, recourse must be had to another scheme. Pin a large square of paper, closely ruled, down to a board, number the lines from top to bottom on the left hand from 100 to 1. Number also a long strip of similarly ruled paper from 150 to 1. The marks to be dealt with can easily be brought by division to a maximum lower than 150. Say they range from 143 to 51 and that we require a range of 100 to 30. Pin down the strip so that 143 is on 100. Using the pin as a centre, move the strip across the sheet till 51 rests on the ruled line on which 30 stands. Fix the strip with a second pin. The strip should lie diagonally across the sheet and the lines running from the figures on it, which represent marks according to the original list, to the figures on the left-hand side will point to the corresponding numbers in the required scale. It is a help to the eye to mark a second row of figures parallel with the numbers on the left hand two-thirds of the way across the sheet. With the exercise of a little ingenuity a more serviceable apparatus can be rigged up by means of metre measures and a cross bar working in metal slides.

VALUE OF MARKS.

Such are some of the mechanical methods of treating marks; but let us never forget that marks are an evil, used to the extent that they are in England. A German professor, on a tour of inspection of English schools, had been listening to an explanation of an elaborate system of combining

marks: "And do you dare," he remarked, "to tell a boy that he is last in his form?"

The way to train boys to work for work's sake does not lie in wonderful plans of extracting a form order out of a chaos of sets—this is but the cleansing of the cup and the platter. Sometimes marks, orders and reports are considered of such importance that the wood of work cannot be seen for the trees of figures which are supposed to represent it.

Organisation, however perfect, does not supply the place of that informing spirit—stimulus.

EDUCATIONAL PROGRESS IN LONDON.

THERE are two sides to education, just as there are two sides to everything else. Of this elementary truth we are very forcibly reminded by four publications of the Education Committee of the London County Council, which have just been issued. Shortly put, these are: (1) Report on School Accommodation; (2) Report on School Attendance; (3) Report on Schools for Blind, Deaf and Defective Children; (4) Report on Underfed Children. None deal with the mental progress made inside the school; all deal with the machinery devised to effect that mental progress. Whether the instruction given in the schools is of the quality desired, is one aspect into which these reports do not go; they show us the other aspect, viz., the provision made by the Local Authority for carrying into effect the different Education Acts since 1870.

And this other aspect is for once most interesting reading and most encouraging to those who have the welfare of the children of London at heart. There is a humanitarian spirit breathing throughout the pages, a careful consideration for the needs of this kaleidoscopic London, which reflects the greatest credit upon the committee and their officers (a special visitor for Italian children is employed for three days a week in one division). Ratepayers will never really know how well they are served by the permanent staffs of these bodies until they are able to read between the lines of these huge reports and to detect running through them an amount of discrimination, of foresight, and of ingenuity which is really more absorbing and romantic than that of the most fantastic plot we meet with in our summer novel. But the hopefulness which the figures suggest cheers us in a twofold sense. The books record that 87 out of every possible 100 attendances are made by London children. Ten years ago this was below 80 and this is out of a population of 882,000 children.

Glasgow, the second city of the Empire, has a total population of only 786,000, and the County Council has to get to school in London more children than there are people in Glasgow or Liverpool, and double the number there are in Leeds. Surely the magnitude of the task can only be faintly realised.

¹ Aston & Mander, 25, Old Compton Street, Soho.

This huge mass is not only coming to school more regularly, but we are delighted to record that it is coming by the exercise of less force, both legal and Bumble; 2,300 fewer summonses were issued last year, and 10,600 less than in the year 1900. Of cautionary notices (these are Mr. Bumble's serious warnings) there were many thousands less than the number issued in any year. In this the official mind rejoices and ascribes the result to a very great extent to the systematic visiting of the parents of the absent children. There is no doubt whatever that London is provided with a most efficient system and a most able and energetic staff of attendance officers, and speaking from an intimate knowledge of many of them, we can say that in tact, discretion, and kindly feeling towards the parents and children, they are a body of whom any community may feel very proud. But we see another side in this enormous decrease of summonses. There is a more enlightened spirit abroad among our people; though, here and there, there are sad cases of neglect, gross and revolting in the extreme, the heart of the mass beats true. There is an upward movement out of the realm of force into the kingdom of duty, and it is in this we rejoice. The general law of development, an arrest of which would cause us real anxiety, prevails, and we are justified in feeling a sense of hopefulness as we read the pages of these reports.

THE FIFTH CAMPAIGN AT KNOSSOS.¹

MR. EVANS'S fifth campaign at Knossos has not had the same sensational results as some of the earlier ones, but the results are sufficiently interesting to the expert. Light has been thrown on the relation of the various Minoan periods to each other, and on the earliest form of the palace; a paved roadway has been opened up to a considerable distance, and seems likely to lead to further discoveries; a large deposit of inscribed tablets has been found; a number of tombs have been opened, including a tholos of a new type; and much material has been found for the study of pottery.

The remains of a very early shrine of the snake-goddess have come to light; but we note that Mr. Evans still neglects this remarkable cult to harp on his Zeus and his "double-axes." A few remains of new fresco paintings are too fragmentary to be of the same importance as the earlier discoveries; but M. Gilliéron, we learn, has very skilfully been piecing together the fragments which have been found, and we hope that these, when published in the great work on Knossos, will throw much light on the life of these ancient peoples. It is important also to notice that a new piece of "Eteocretan" in Greek letters has been found at

Præsos. Prof. Conway examines this, and finds reason for adhering to his view that this was an Indo-European dialect and akin to Greek. We expect to hear of more such discoveries in Præsos, where the ancient language continued to be spoken quite late. Was Eteocretan compulsory in the schools of Præsos, by any chance?

There are no less than thirteen papers in this "Annual," and we have not space to examine them all. We may, however, call attention to an able article in German, by H. Schaefer on "Altägyptische Pflüge, Joche, und andere landwirthschaftliche Geräthe," fully illustrated from the contents of the Berlin Museum and ancient monuments. Mr. R. M. Dawkins continues his notes from Karpathos. He has substantially added to our knowledge of modern Greek dialect; having himself had a training in phonetics and comparative philology, his observations are recorded with extraordinary care and exactitude. Mr. E. S. Forster gives notes of ancient sites in Laconia, and publishes a number of new inscriptions. Lastly, the examinations at Palaikastro are further described by Mr. Dawkins. Most of his discussion deals with pottery; but of prime interest is a snake-goddess shrine with small female and bird figures, one female figure holding a snake. Apparently, she formed the centre of a group of dancing votaries, a new and important point. Mr. Dawkins is also able, by an ingenious combination of indications archæological and linguistic, to identify the goddess with Rhea or Cybele. This might have been foreseen, and has of course been suggested, but direct evidence has not hitherto been forthcoming.

SECONDARY EDUCATION IN HAMPSHIRE.¹

THIS valuable report is the outcome of an inquiry made in the spring and summer of 1904, on behalf of the Education Committee of the Hampshire County Council. Though its criticisms and suggestions relate especially to one county, yet it is certain to prove almost equally useful to educationists in other districts. For it is no empirical piece of work, no mere accumulation of miscellaneous local information. Like everything that Prof. Michael Sadler writes, it is illuminated by ideas, elevated by ideals, and unified by great guiding principles.

Prof. Sadler's chief concern evidently is that the standard of secondary education should be considerably raised. "The main principle upon which the following report is based," he says, in his introduction, is "that in the reorganisation of English secondary education it is desirable to provide for a sufficient though limited number of well-placed secondary day-schools, so staffed and equipped as to give an intellectual and corporate

¹"The Annual of the British School at Athens." X. 1903-4. viii. + 275 pp. Plates and illustrations. (Macmillan.) 17s. net.

¹"Report on Secondary and Higher Education in Hampshire, 1904. By Prof. Michael E. Sadler. (Portsmouth: Holbrook.)

training of high value as a preparation for professional callings and for posts of responsibility in business and in administration, instead of expending all available funds upon a cheaper type of secondary schools which, though capable of rendering useful service as a subsidiary part of a county system, would because relatively weak upon the intellectual side, be unable, if acting alone, permanently to maintain and develop a high standard of educational efficiency."

Dr. Sadler discusses in a lucid and able manner the connection which should be established between these higher secondary schools and existing schools—elementary schools on one hand, grammar schools and private schools on the other. He treats of the general aims of the education to be given in such schools, the curricula to be adopted, and the means to be employed in the securing and the selecting of pupils. Finally, he applies his principles to the particular case of Hampshire, and recommends that four centres of higher secondary education should be developed in the county, viz., at Winchester, Petersfield, Basingstoke, and Andover. This scholastic "quadrilateral" would, he thinks, supply all the present needs of the county—the county boroughs of Portsmouth, Southampton, and Bournemouth, which did not come within the scope of his inquiry, of course excepted.

The Hampshire County Council is to be highly commended for its enterprise in securing Prof. Sadler to make this report, and heartily congratulated on the brilliance of his achievement.

F. J. C. H.

A MANUAL FOR SCIENCE STUDENTS.¹

IN the year 1899 Messrs. Macmillan and Co. published a small volume entitled "Magnetism and Electricity for Beginners." The ability displayed by Mr. Hadley in writing this book led teachers and students to hope for a more advanced treatise from the pen of the same author; and now that this treatise has appeared, it will be readily conceded that the highest expectations formed have been amply realised. The lucidity and exactness which characterised the earlier and more elementary work of the author are no less noticeable in "Magnetism and Electricity for Students." The book is well illustrated, most of the drawings having been specially made for the book; and the printing and general get up are beyond praise, and reflect the greatest credit on the firm which has produced it, and the editors whose careful supervision has done so much to secure the popularity of the series of text-books "for students," of which the volume in question forms the latest instalment.

In taking up the study of electricity and magnetism, students are often impeded by their lack of knowledge of mechanical principles. It is well that it should be recognised from the outset that

electricity is an experimental science, and that observation and measurement must always precede, and form the foundation for, the theories which may be framed to account for the phenomena observed. The fundamental phenomena comprise the forces acting between two magnet poles, between two electric charges, between an electric current and a magnet pole, and between two electric currents; these phenomena cannot be appreciated until the laws of action of forces are fully understood, that is, until the principles of mechanics have been mastered. This being so, the student will value the succinct account of mechanical principles which is given in the second chapter.

The first six chapters deal with the general properties of magnets in an instructive manner. Great attention is very justly devoted to the properties of the magnetic field, and the author's careful description of Maxwell's method of plotting lines of force will do much good, since this is seldom mentioned in books accessible to students. A small mistake on p. 8 may be pointed out: iron is non-magnetic above the "arrest point" Ar_1 , which corresponds to a temperature of 710°C . (Le Chatelier), instead of above 870°C ., as stated; further, the visible recalescence observed by Barrett occurs at about 645°C ., and is quite distinct from the magnetic change which occurs when β iron changes into α iron at Ar_2 .

The magnetic condition of the earth is described together with the instruments used for investigating this. The terse description given of the corrections required to eliminate the errors of the dip needle should prove useful; the principles involved in each correction are clearly explained in the fewest possible words, each being illustrated by an appropriate diagram, so that there will henceforth be no excuse for want of comprehension of these.

Chapters VII. to XIII. deal with static electricity. The method, due to Mr. D. Robertson, of mapping the electric lines of force, much as magnetic lines may be mapped out by the aid of iron filings, could advantageously be performed in the laboratory. The proof that the intensity within a hollow charged conductor is zero (p. 142) is hardly satisfactory, since the same method would show that the intensity at a point outside a charged conductor is also zero, provided there were no charge at the point. A simpler method is obtained by noticing that a line of force cannot exist inside a hollow conductor charged only on its surface, since if it did the line would have to start from and end on the same conductor, which is impossible. The fact that the attraction between two parallel plates possessing constant charges is not modified by introducing a slab of solid dielectric between them, while it is diminished if the space between them is entirely filled by a liquid dielectric, might have been explained with advantage. The above criticisms only refer to details of this section, the general tenour of which is excellent.

The student generally finds a wide gap between

¹ "Magnetism and Electricity for Students." By H. E. Hadley. x. + 575 pp., with 377 illustrations. (Macmillan.) 6s.

the theories of static and voltaic electricity. Mr. Hadley has succeeded in making the transition between these as easy and natural as possible, but the writer of this review feels that a more systematic development of the electro-magnetic units might have been furnished. Thus, the magnetic field at a point on the axis of a circular current (p. 255) is derived before the unit of current has been defined; this is only a minor matter, but the introduction of the terms E. M. F. and P. D. on p. 236, without any definition other than that obtained in the section of electrostatics, is more serious. It is true that Mr. Hadley could, if he wished, quote many eminent authorities who have used the same method as himself; but anyone who has read the discussion as to the seat of the E. M. F. in a cell, which was started at a meeting of the British Association some years ago by Sir Oliver (then Dr.) Lodge, must have been struck with the fact that the difference of opinion between eminent men, which was then made apparent, could never have arisen if a precise definition of E. M. F. had been recognised. The present writer has found the following method of procedure to be most easily understood:—

(1) Define unit magnet pole, and unit magnetic field.

(2) Define unit current in terms of the field that it produces.

(3) Notice that the force of the current on the pole must be equal and opposite to the force of the pole on the current; this gives a numerical expression for the force acting on a given current flowing perpendicular to a given magnetic field.

(4) When a current flows through a wire heat is produced, and consequently energy is dissipated. Define potential difference (P. D.) as the energy dissipated per unit current per unit time (*i.e.*, W/Ct , where W is the energy dissipated by a current C in the time t). Extend this to energy transformations which are not dissipative in character, such as those which occur in a cell.

(5) When a conductor is moved so as to cut lines of force, experiment shows that a current may be produced if the conductor forms part of a closed circuit. Hence, energy must be generated and work must be performed in moving the conductor, which gives us Lenz's law. Equating the mechanical work performed to the electrical energy generated, we obtain an expression for the E. M. F. produced, and find that this is equal to the number of magnetic lines cut per second.

(6) *Ohm's Law*.—The P. D. between the ends of a conductor kept at a uniform temperature is proportional to the current flowing through the conductor (experimental result). Hence, resistance is equal to the P. D. per unit current.

I have ventured to give the above brief synopsis, since I have found that in realising the exact meaning of the electro-magnetic units students find greater difficulty than in any other part of the subject.¹

The above, I believe, exhausts all the objections that can be fairly raised to Mr. Hadley's treatment of the subject, and the same objections would apply to almost any other text-book on Electricity that could be named. On the other hand, I know of no text-book at a similar price which contains such an amount of valuable information, and where so much trouble has been taken to remove all difficulties which are likely to arise in the path of the reader. The various electrical measurements are explained and illustrated in a most admirable manner. The careful reasoning employed in the chapter on thermo-electricity should make this difficult branch of the subject quite clear to the ordinary reader.

Toward the end of the book a chapter is devoted to the discharge of electricity through gases, and in this the modern theory of electrons is carefully explained. X-rays, Becquerel rays, and the properties of radium, all come in for their due share of notice. The chapter on Units and their Dimensions will also prove very useful. The last chapter but one contains an account of the electro-magnetic theory, which will doubtless be welcomed as giving a simple account of this fascinating branch of the subject. Electric oscillations and wireless telegraphy are explained in the last chapter.

Finally, viewing the book as a whole, it may be said that all branches of the science of electricity and magnetism (except those of a purely technical character, which are not dealt with) receive adequate attention. A summary is added at the end of each chapter, and numerous examples are worked in the text, while others are appended at the ends of the chapters, answers being given at the end of the book. There can be little doubt that this book will be used by all students who wish to obtain a comprehensive and exact knowledge of the subject; it is particularly well adapted to the use of students preparing for the Board of Education Examinations in Electricity and Magnetism (stages ii. and iii.), or for the B.Sc. Examination of the London University. Its low price brings it within the reach of all, and there can scarcely be a doubt that it will meet with the popularity which it merits.

E. EDSEK.

FROM the twenty-ninth Report of the Secretary for Public Instruction in Queensland we learn that the Board of Technical Instruction is dissatisfied with the system of primary instruction and the professional capacity of State school teachers, alleging that it is necessary to teach certain pupils over again the subjects which they had been taught in the State schools, before they can proceed with the ordinary technical class subjects. The Secretary for Public Instruction, however, characterises this charge as "unwarranted," and points out several other instances in which the Board of Technical Instruction is in error. There is apparently a considerable amount of friction between the two authorities. The director of education, in his report, states that the addition of nature study to the schedule has occasioned considerable perplexity amongst teachers and the public generally, and he proceeds to make clear the attitude of the Department in this respect, making out a very good case for this addition.

¹ For a more detailed development see "The Electro-magnetic Theory explained without the Aid of the Higher Mathematics." By E. Edser. Vol. iii., *Technics*, No. 13, January, 1905. 36-45 pp.

THE PLANNING AND FITTING OF ELEMENTARY SCHOOLS.¹

THE growing recognition of the connection between teaching and the material surroundings in which it is effected should make the new building regulations just issued by the Board of Education of interest to all who are concerned with elementary education. Though the planning and arrangement of elementary schools has gone through developments and vicissitudes since the Act of 1870, this section of our educational system is now in a comparatively stable condition, and therefore we should not expect, nor do we find, any drastic alterations in this new issue of the regulations. They possess, however, at the present time a special importance in view of their extended application under the new Act to voluntary schools.

Although presenting for all cases a model to be aimed at, the rules only apply strictly to new buildings; alterations to existing buildings are considered individually by the Board in the light of each special environment. The whole tone of the fourteen pages comprising the issue indicates a desire to assist school managers by the avoidance of conditions of too arbitrary a character, and ratepayers will be gratified to find that no new demands likely to increase the cost of building are to be found, but that there is rather a tendency towards economy by an actual decrease in certain space requirements and greater license in the choice of subjects for which provision must be made.

The regulations have been recast and are now conveniently divided into three parts, dealing with general arrangement and design, construction and sanitation, and with the submission of plans.

Part I. does not purport to contain regulations, but to be advisory and suggestive in character, showing how to make for efficiency; nevertheless, it contains some very definite statements upon dimensional and other requirements which are not to be departed from without grave reason. To deal with the more important points *seriatim*: it is seen first that the suggested limit of 1,000 to 1,200 scholars as the maximum for any school does not appear in this issue, and that in place of the 400 limit for each department the words "four or five hundred" are substituted. The plan of a school with a central hall with an area of $3\frac{1}{2}$ to 4 square feet per head, and surrounded by class rooms, now so generally approved for secondary schools, is still enjoined when the departments contain 350 or upwards; but, where in small schools a schoolroom replaces the hall, its accommodation should be limited to one hundred places, and, unlike the ordinary class-room, it must be lighted from both sides.

The general recommendations for class-rooms remain the same, an area of 10 square feet per head (9 for infants) being demanded, but the

minimum size of room, 18 feet by 15 feet, has been omitted, which will often remove an unnecessary worry in planning. The desk length of 18 inches at long desks, and 20 inches at dual desks, per scholar (2 inches less in each case for infants) is retained, but the maximum length for long desks, previously fixed at 12 feet, though hardly likely to be exceeded, is now left to discretion. Long desks are not allowed in higher elementary schools, and have for some time been abolished in secondary schools under the Board. On the other hand, the possible approval of single desks in lower elementary schools has been withdrawn. An important modification appears in the demand for corridor width required for marching and exercise in infants' schools: this, previously 16 feet, is now only 12 feet, and where no hall or available corridors exist a space of this width must extend right across the class-room.

The requirements for special subjects show no material alteration, but a summary of the regulations may be useful. For cookery, provision for from twelve to eighteen girls at work, and for from thirty-six to fifty-four at demonstrations, is required, involving some 10,500 cubic feet; and 20 square feet per head for those at practical work, in addition to the space for raised desks. Laundries should be detached from the main building, and provide about 750 square feet. In both the above buildings special ventilation is required. Workshops may be of the lean-to type and open to the roof apex, and should provide about 35 square feet per head. Science rooms and drawing rooms should be limited to about 600 square feet in area; the provision of sinks and even gas in science rooms is no longer demanded. No special science lecture-room is approved for a lower elementary school.

Turning to higher elementary schools, special attention is not now directed to the necessity for a central hall, though doubtless it would be required for large numbers; further, the number of class-rooms required for 300 to 350 scholars has been modified from 10 to "from 8 to 10." Another important modification exists in the matter of floor area required in these schools being now 15 and 12 square feet, for single and dual desks respectively, as against 16 and 13 square feet per head previously required. Finally, greater license is now given in the choice of subjects for instruction and in the size of classes allowed.

Parts II. and III. of the regulations, dealing with construction, sanitation and the submission of plans, are more the concern of the architect than of the school authorities. The most important change here is a very sensible alteration which will considerably reduce the cost of any hollow walls. The height of rooms with a flat ceiling is retained at 12 feet as a minimum; the only new dimensional requirement, in fact, is one requiring all cloak-room gangways to be 4 feet wide. Warming, sanitation, lighting, and ventilation are adequately dealt with, and in reference to the last it may be observed that a specified area of inlets and outlets per head is omitted.

¹ "The Building Regulations: being Principles to be observed in Planning and Fitting up New Buildings for Public Elementary Schools." (Ed. 2003.) (Wyman.) 2d.

The acceptance by the Board of smaller scale drawings for general initial approval of a new scheme, and the requirement of merely an approximate instead of a detailed statement of cost, will do much to facilitate the progress of negotiations in future. The present issue of regulations will apply to all schemes which have not received at least provisional approval of plans submitted before October 1st of this year.

The carrying out of a scheme for erecting new buildings or for alteration of existing buildings, involving as it does so many fixed requirements, often only to be reconciled with existing conditions after considerable thought and labour, must always necessitate much preliminary care on the part of school authorities as to present and possibly future needs before any working basis is finally adopted. Decisions as to apparently trifling matters, which though small in themselves may influence the plan vitally, will alone avoid the vexations and loss of time too often involved in the attempt to rectify subsequently the results of initial ambiguity.

THE HUMAN SIDE OF EDUCATION.¹

IT is not my intention to-day to survey the year's work—it seems to me somewhat out of place—nor is it my intention to survey my fifteen and a half years' service as headmaster—that would be still more out of place.

When I came here in January, 1890, my governing body, the Court of Common Council, had ordered considerable changes to be made, and this circumstance has necessarily made me play a large historic part in the development of this school. The way in which I have borne myself in playing that part it is not for me to estimate, but if I may judge by the manifestations of goodwill which I have received since my retirement was announced, the bond which has bound me to my pupils has not been only the formal bond of boy and headmaster, but the closer tie of affection and mutual understanding.

I have not used occasions like this prize-giving to talk to you much about education; I have always felt that to act was better than to preach. In the period of greater freedom and less responsibility which I have attained I may perchance be able to say something on the subject which I have had most at heart, on the lessons which I have learnt in more than a quarter of a century of the practice of education, of which twenty-two years have been spent in the position of headmaster. If I were to say anything now, I should desire to emphasise the human side of teaching, and to urge that the thing that matters in education is the man and not the method. "The letter killeth but the Spirit giveth life."

I have not used these occasions, either, to address exhortations to you, boys, but I may be pardoned

if I avail myself of the present opportunity. I might enlarge, if I wished, on the necessity of your making, each and all of you, the most of your abilities, of your forming the highest ideals; but I prefer to speak to you of certain points of conduct and of character. Train yourselves to maintain a reverent spirit in all things; train yourselves to recognise duty, and to do it; to take opinions, but to act on your own responsibility; to make up your minds promptly if need be, but, for the most part, deliberately and surely, with knowledge and with foresight; discipline yourselves, above everything, to maintain in after years your schoolboy virtue of truth. You will then have many of the qualities which go to make a man; but these qualities, important as they are, are not everything; you must add to them at least two others—pluck and determination. With this equipment you will be able to face the larger world of life; and, though you will find that what we call accident is a great factor in it, you will be able to congratulate yourselves when your work is done on having borne with honour the burden and heat of the day.

It remains now to say that word which we so often lightly use at casual partings—good-bye. I utter it not only with the natural emotion which this occasion and your splendid farewell greeting prompt, but with the far fuller, far deeper meaning which attaches to it by its origin, and is the best wish that I can offer for you all.

UNIVERSITY EDUCATION AND NATIONAL LIFE.¹

EVERY country has educational problems of its own, intimately dependent on its social and economic conditions. The progressive study of education tends, indeed, towards a certain amount of general agreement on principles. But the crucial difficulties in framing and administering educational measures are very largely difficulties of detail; since an educational system, if it is to be workable, must be more or less accurately adjusted to all the complex circumstances of a given community. As one of those who are now visiting South Africa for the first time, I feel that what I bring with me from England is an interest in education, and some acquaintance with certain phases of it in the United Kingdom; but with regard to the inner nature of the educational questions which are now before this country, I am here to learn from those who can speak with knowledge. In this respect the British Association is doing for me very much what a famous bequest does for those young men whom it sends to Oxford; I am, in fact, a sort of Rhodes scholar from the other end—not subject, happily, to an age limit—who will find here a delightful and instructive opportunity of enlarging his outlook on the world, and more particularly on the field of education.

As usage prescribes that the work of this Section, as of others, should be opened by an address from the Chair, I have ventured to take a subject suggested by one of the most striking phenomena of our time—the growing importance of that part which universities seem destined to play in the life of nations.

¹ From the farewell Address delivered at the City of London School by Mr. A. T. Pollard, who resigned the head-mastership of the school at the end of last term.

¹ Address delivered at Cape Town to the Educational Science Section of the British Association for the Advancement of Science, by Sir Richard C. Jebb, Litt.D., D.C.L., M.P., President of the Section.

Among the developments of British intellectual life which marked the Victorian age, none was more remarkable, and none is more important to-day, than the rapid extension of a demand for university education, and the great increase in the number of institutions which supply it. In the year 1832 Oxford and Cambridge were the only universities south of the Tweed, and their position then was far from satisfactory. Their range of studies was too narrow; their social operation was too limited. Then, by successive reforms, the quality of their teaching was improved, and its scope great enlarged; their doors were opened to classes of the community against which they had formerly been closed. But meanwhile the growing desire for higher education—a result of the gradual improvement in elementary and secondary training—was creating new institutions of various kinds. The earliest of these arose while access to Oxford and Cambridge was still restricted. The University of Durham was established in 1833. In 1836 the University of London, as an examining and degree-giving body, received its first charter. A series of important colleges, giving education of a university type, arose in the greater towns of England and Wales. The next step was the formation of federal universities. The Victoria University, in which the colleges of Manchester, Liverpool and Leeds were associated, received its charter in 1880. The colleges of Aberystwith, Bangor and Cardiff were federated in the University of Wales, which dates from 1893. The latest development has been the institution of the great urban universities. The foundation of the University of Birmingham hastened an event which other causes had already prepared. The federal Victoria University has been replaced by three independent universities, those of Manchester, Liverpool and Leeds. Lastly, a charter has recently been granted to the University of Sheffield. Then the University of London has been reconstituted; it is no longer only an examining board; it is also a teaching university, comprising a number of recognised schools in and around London. Thus in England and Wales there are now no fewer than ten teaching universities. Among the newer institutions there are some varieties of type. But, so far as the new universities in great cities are concerned, it may be said that they are predominantly scientific, and also that they devote special attention to the needs of practical life, professional, industrial and commercial; while at the same time they desire to maintain a high standard of general education. It may be observed that in some points these universities have taken hints from the four ancient universities of Scotland, which themselves have lately undergone a process of temperate reform. The Scottish universities are accessible to every class of the community; and the success with which they have helped to mould the intellectual life of a people traditionally zealous for education renders their example instructive for the younger institutions. With reference to the provision made by the newer universities for studies bearing on practical life, it should be remarked that much has been done in the same direction by the two elder universities also. At Cambridge, for example, degrees can be taken in Economics and associated branches of Political Science; in Mechanism and Applied Mechanics; and in Agricultural Sciences. It certainly cannot now be said that the old universities neglect studies which are of direct utility, though they rightly insist that the basis and method of such studies shall be liberal.

In looking back on the general course of this whole movement in England, we find that it has been steady, smooth and fairly rapid. It has not been due to any spasmodic impulse or artificial propaganda, but has been the result of natural forces operating throughout the nation. Universities, and the training which they give, have come to count for more in our national life as a whole. It should be noted in passing that our missionary movement known as University Extension did not

rise in the first instance from spontaneous academic action, but was a response to public appeals from without. It had its origin in memorials addressed to the University of Cambridge in 1872, by various public bodies; and it was in compliance with those memorials that, in the winter of 1873, the first courses of Extension lectures were organised in the midlands. Another fact of vital significance in the movement is that it has included ample provision for the higher education of women.

With reference to the present position and prospects of the higher education in South Africa, I tried, before leaving England, to acquaint myself with at least the outlines of the general situation; but it is only with great diffidence that I shall offer a few observations bearing on some of the broader aspects of the question. I trust to be heard with indulgence by those from whom I shall hope to learn more. At any rate, I can truly say that the question seems to me one of the deepest interest and of the gravest importance. Indeed, it does not require much insight or imagination to apprehend the greatness of the issues that are involved.

In the first place, it would be correct, if I am not mistaken, to say that in South Africa at large there is a genuine and a keen desire for efficient education of the highest type. A sound liberal education is desired for all who can profit by it, whatever their future callings are to be. But the practical and immediate need for the organising of the highest teaching is felt, I believe, more particularly in regard to three great professions—the profession of engineering, in all its branches; the profession of agriculture (including forestry); and the profession of education itself, on which the intellectual future of South Africa must so largely and directly depend. That the interest in the higher instruction is so real must be regarded as the best tribute to the efforts of those able and devoted men who, in various parts of this land, have laboured with dauntless perseverance for the improvement of primary and secondary education. Unstinted gratitude is due also to the University of the Cape of Good Hope. It is acknowledged on all hands that the University, as the chief guardian of learning in South Africa, has done admirable work in maintaining a high standard of general education. Certainly it cannot be regarded as any disparagement of that work if, as seems to be the case, a widespread desire exists that South Africa should possess an institution or institutions of university rank which, besides examining, should also teach. That is a natural progress which is illustrated by the recent reconstitution of the London University itself. I am not qualified, nor should I desire, to discuss the various difficulties of detail which surround the question of a teaching university. That question is for South Africa an eminently practical one; and doubtless it will be solved, possibly at no distant time, by those who are most competent to deal with it. I will only venture to say a few words on some of the more general aspects of the matter.

The primary needs of daily life in a new country make demands for certain forms of higher training—demands which may be unable to wait for the development of anything so complex and costly as a teaching university. It is necessary to provide a training for men who shall be able to supervise the building of houses, the making of roads, bridges and railways, and to direct skilled labour in various useful arts and handicrafts. The first step in such a provision is to establish technical schools and institutes. Germany is, I suppose, the country where the educational possibilities of the technical school are realised in the amplest measure. In Germany the results of the highest education are systematically brought to bear on all the greater industries. But this highest education is not given only in completely equipped universities which confer degrees. It is largely given in the institutions known as Technical High Schools. In these schools teaching of a university standard is given, by professors of university rank, in subjects such as Architecture, various

branches of Engineering, Chemistry and General Technical Science. There are, I think some ten or eleven of these technical high schools in Germany. In these institutions the teaching of the special art or science on the theoretical side is carried, I believe, to a point as high as could be attained in a university; while on the practical side it is carried beyond the point which in a university would usually be possible. In England we have nothing, I believe, which properly corresponds to the German technical high school; but we may expect to see some of the functions of such a school included among the functions of the new universities in our great industrial and commercial towns.

New technical schools or institutes which do not reach the level of a German technical high school may nevertheless be so planned as to be capable of being further developed as parts of a great teaching university. And the point which I now wish to note is this—that the higher education given in a technical institute, which is only such, will not be quite the same as that given in the corresponding department of a teaching university. University education, as such, when it is efficient, has certain characteristics which differentiate it from the training of a specialist, however high the level of the teaching in the special subject may be. Here, however, I pause for a moment to guard against a possible misconception. I am not suggesting that the specialist training given in a technical institute, though limited, is not an excellent thing in itself; or that in certain conditions and circumstances it is not desirable to have such a training, attested by a diploma or certificate, instead of aiming at a university standard and a university degree. Universities themselves recognise this fact. They reserve their degrees for those who have had a university training; but they also grant diplomas for proficiency in certain special branches of knowledge. Cambridge, for instance, gives a diploma in the Science and Practice of Agriculture; and the examination for the diploma is open to persons who are not members of the university.

But the university training, whatever its subject, ought to give something which the purely specialist training does not give. What do we understand by a university education? What are its distinctive characteristics? The word *universitas*, as you know, is merely a general term for a corporation, specially applied in the Middle Ages to a body of persons associated for the purposes of study, who by becoming a corporation acquired certain immunities and privileges. Though a particular university might be strongest in a particular faculty, as Bologna was in Law and Paris in Theology, yet it is a traditional attribute of such a body that several different branches of higher study shall be represented in it. It is among the distinctive advantages of a university that it brings together in one place students—by whom I mean teachers as well as learners—of various subjects. By doing this the university tends to produce a general breadth of intellectual interests and sympathies: it enables the specialist to acquire some sense of the relations between his own pursuits and other pursuits: he is helped to perceive the largeness of knowledge. But, besides bringing together students of various subjects, it is the business of a university to see that each subject shall be studied in such a manner as to afford some general discipline of the mental faculties. In his book on "The Idea of a University" Newman says:—

"This process of training by which the intellect, instead of being formed or sacrificed to some particular or accidental purpose, some specific trade or profession, or study or science, is disciplined for its own sake, for the perception of its own proper object, and for its own highest culture, is called Liberal Education; and though there is no one in whom it is carried as far as is conceivable, or whose intellect would be a pattern of what intellects should be made, yet there is scarcely any one

but may gain an idea of what real training is, and at least look towards it, and make its true scope and result, not something else, his standard of excellence; and numbers there are who may submit themselves to it and secure it to themselves in good measure. And to set forth the right standard, and to train according to it, and to help forward all students towards it according to their various capacities, this I conceive to be the business of a university."

It may be granted that the function of a university, as Newman here describes it, is not always realised; universities, like other human institutions, have their failures. But his words truly express the aim and tendency of the best university teaching. It belongs to the spirit of such teaching that it should nourish and sustain ideals; and a university can do nothing better for its sons than that; a vision of the ideal can guard monotony of work from becoming monotony of life. But there is yet another element of university training which must not be left out of account; it is, indeed, among the most vital of all. I mean that informal education which young men give to each other. Many of us, probably, in looking back on our undergraduate days, could say that the society of our contemporaries was not the least powerful of the educational influence, which we experienced. The social life of the colleges at Oxford and Cambridge is a most essential part of the training received there. In considering the question of the higher education in South Africa it is well to remember that the social intercourse of young students, under conditions such as a great residential university might provide, is an instrument of education which nothing else can replace. And it might be added that such social intercourse is also an excellent thing for the teachers.

The highest education, when it bears its proper fruit, gives not knowledge only, but mental culture. A man may be learned and yet deficient in culture; that fact is implied by the word "pedantry." "Culture," said Huxley, "certainly means something quite different from learning or technical skill. It implies the possession of an ideal, and the habit of critically estimating the value of things by a theoretic standard." "It is the love of knowledge," says Henry Sidgwick, "the ardour of scientific curiosity, driving us continually to absorb new facts and ideas, to make them our own, and fit them into the living and growing system of our thought; and the trained faculty of doing this, the alert and supple intelligence exercised and continually developed in doing this—it is in these that culture essentially lies." And if this is what culture really means, evidently it cannot be regarded as something superfine—as an intellectual luxury suited only for people who can lead lives of elegant leisure. Education consists in organising the resources of the human being; it seeks to give him powers which shall fit him for his social and physical world. One mark of an uneducated person is that he is embarrassed by any situation to which he is not accustomed. The educated person is able to deal with circumstances in which he has never been placed before; he is so, because he has acquired general conceptions; his imagination, his judgment, his powers of intelligent sympathy, have been developed. The mental culture which includes such attributes is of inestimable value in the practical work of life, and especially in work of a pioneer kind. It is precisely in a country which presents new problems, where novel difficulties of all sorts have to be faced, where social and political questions assume complex forms for which experience furnishes no exact parallels, it is precisely there that the largest and best gifts which the higher education can confer are most urgently demanded.

But how is culture, as distinct from mere knowledge, to be attained? The question arises as soon as we turn from the machinery of the higher education to consider its essence, and the general aims which it has in view. Culture cannot be secured by planning courses of study, nor can it be adequately tested by

the most ingenious system of examinations. But it would be generally allowed that a university training, if it is really successful, ought to result in giving culture, over and above such knowledge as the student may acquire in his particular branch or branches of study. We all know what Matthew Arnold did, a generation ago, to interpret and diffuse in England his conception of culture. The charm, the humour, and also the earnestness of the essays in which he pleaded that cause render them permanently attractive in themselves, while at the same time they have the historical interest of marking a phase in the progress of English thought and feeling about education. For, indeed, whatever may be the criticisms to which Arnold's treatment of the subject is open in detail, he truly indicated a great national defect; and by leading a multitude of educated persons to realise it, he helped to prepare the way for better things. Dealing with England as it was in the 'sixties, he complained that the bulk of the well-to-do classes were devoid of mental culture—crude in their perceptions, insensible to beauty, and complacently impenetrable to ideas. If, during the last thirty or forty years, there has been a marked improvement, the popular influence of Matthew Arnold's writings may fairly be numbered among the contributory causes, though other and much more potent causes have also been at work. When we examine Arnold's own conception of culture, as expressed in successive essays, we find that it goes through a process of evolution. At first he means by "culture" a knowledge and love of the best literature, ancient and modern, and the influence on mind and manners which flows thence. Then his conception of culture becomes enlarged; it is now no longer solely or mainly æsthetic, but also intellectual; it includes receptivity of new ideas; it is even the passion for "seeing things as they really are." But there is yet a further development. True culture, in his final view, is not only æsthetic and intellectual; it is also moral and spiritual; its aim is, in his phrase, "the harmonious expansion of all the powers which make the beauty and worth of human nature." But whether the scope which Arnold, at a particular moment, assigned to culture was narrower or wider, the instrument of culture with which he was chiefly concerned was always literature. Culture requires us, he said, to know ourselves and the world; and as a means to this end, we must "know the best that has been thought and said in the world." By literature, then—as he once said in reply to Huxley—he did not mean merely *belles lettres*; he included the books which record the great results of science. But he insisted mainly on the best poetry and the highest eloquence. In comparing science and literature as general instruments of education, Arnold observed that the power of intellect and knowledge is not the only one that goes to the building-up of human life; there is also the power of conduct and the power of beauty. Literature, he said, serves to bring knowledge into relation with our sense for conduct and our sense for beauty. The greater and more fruitful is the progress of science the greater is the need for humane letters to establish and maintain a harmony between the new knowledge and those profound unchanging instincts of our nature.

It is not surprising that, in the last third of the nineteenth century, Arnold's fascinating advocacy of literature, as the paramount agency of culture, should have incurred some criticism from the standpoint of science and of philosophy. The general drift of this criticism was that the claim which he made for literature, though just in many respects, was carried too far; and also that his conception of intellectual culture was inadequate. As a representative of such criticism, I would take the eminent philosopher whose own definition of culture has already been cited, Henry Sidgwick; for no one, I think, could put more incisively the particular point with which we are here concerned. "Matthew Arnold's measure of seeking truth," says Sidgwick,

"is a survival from a pre-scientific age. He is a man of letters pure and simple; and often seems quite serenely unconscious of the intellectual limitations of his type." The critic proceeds to enumerate some things which, as he affirms, are "quite alien to the habitual thought of a mere man of letters." They are such as these: "How the crude matter of common experience is reduced to the order and system which constitutes it an object of scientific knowledge; how the precisest possible conceptions are applied in the exact apprehension and analysis of facts, and how by facts thus established and analysed the conceptions in their turn are gradually rectified; how the laws of Nature are ascertained by the combined processes of induction and deduction, provisional assumption and careful verification; how a general hypothesis is used to guide enquiry, and, after due comparison with ascertained particulars, becomes an accepted theory; and how a theory, receiving further confirmation, takes its place finally as an organic part of a vast, living, ever-growing system of knowledge." Sidgwick's conclusion is as follows: "Intellectual culture, at the end of the nineteenth century, must include as its most essential element a scientific habit of mind; and a scientific habit of mind can only be acquired by the methodical study of some part at least of what the human race has come scientifically to know."

There is nothing in that statement to which exception need be taken by the firmest believer in the value of literary education. The more serious and methodical studies of literature demand, in some measure, a scientific habit of mind, in the largest sense of that expression; such a habit is necessary, for instance, in the study of history, in the scientific study of language, and in the "higher criticism." Nor, again, does any one question that the studies of the natural sciences are instruments of intellectual culture of the highest order. The powers of observation and of reasoning are thereby disciplined in manifold ways; and the scientific habit of mind so formed is in itself an education. To define and describe the modes in which that discipline operates on the mind is a task for the man of science; it could not, of course, be attempted by anyone whose own training has been wholly literary. But there is one fact which may be noted by any intelligent observer. Many of our most eminent teachers of science, and more especially of science in its technical applications, insist on a demand which, in the province of science, is analogous to a demand made in the province of literary study by those who wish such study to be a true instrument of culture. As the latter desire that literature should be a means of educating the student's intelligence and sympathies, so the teachers of science, whether pure or applied, insist on the necessity of cultivating the scientific imagination, of developing a power of initiative in the learner, and of drawing out his inventive faculties. They urge that, in the interests of the technical industries themselves, the great need is for a training which shall be more than technical—which shall be thoroughly scientific. Wherever scientific and technical education attains its highest forms in institutions of university rank, the aim is not merely to form skilled craftsmen, but to produce men who can contribute to the advances or their respective sciences and arts, men who can originate and invent. There is a vast world-competition in scientific progress, on which industrial and commercial progress must ultimately depend; and it is of national importance for every country that it should have men who are not merely expert in things already known, but who can take their places in the forefront of the onward march.

But meanwhile the claims of literary culture, as part of the general higher education, must not be neglected or undervalued. It may be that, in the pre-scientific age, those claims were occasionally stated in a somewhat exaggerated or one-sided manner. But it remains as true as ever that literary studies form an indispensable element of a really liberal educa-

tion. And the educational value of good literature is all the greater in our day because the progress of knowledge more and more enforces early specialisation. Good literature tends to preserve the breadth and variety of intellectual interests. It also tends to cultivate the sympathies; it exerts a humanising influence by the clear and beautiful expression of noble thoughts and sentiments; by the contemplation of great actions and great characters; by following the varied development of human life, not only as an evolution governed by certain laws, but also as a drama full of interests which intimately concern us. Moreover, as has well been said, if literature be viewed as one of the fine arts, it is found to be the most altruistic of them all, since it can educate a sensibility for other forms of beauty besides its own. The genius of a Ruskin can quicken our feeling for masterpieces of architecture, sculpture, and painting. Even a very limited study of literature, if it be only of the right quality, may provide permanent springs of refreshment for those whose principal studies and occupations are other than literary. We may recall here some weighty words written by one of the very greatest of modern men of science. "If I had to live my life again," said Charles Darwin, "I would have made it a rule to read some poetry and listen to some music at least once every week. . . . The loss of these tastes is a loss of happiness, and may possibly be injurious to the intellect, and more probably to the moral character, by enfeebling the emotional part of our nature." The same lesson is enforced by John Stuart Mill, in that remarkable passage of his Autobiography where he describes how, while still a youth, he became aware of a serious defect, a great lacuna, in that severe intellectual training which, for him, had commenced in childhood. It was a training from which the influences of imaginative literature had been rigidly excluded. He turned to that literature for mental relief, and found what he wanted in the poetry of Wordsworth. "I had now learned by experience"—this is his comment—"that the passive susceptibilities needed to be cultivated as well as the active capacities, and required to be nourished and enriched as well as guided." Nor is it merely to the happiness and mental well-being of the individual that literature can minister. By rendering his intelligence more flexible, by deepening his humanity, by increasing his power of comprehending others, by fostering worthy ideals, it will add something to his capacity for co-operating with his fellows in every station of life and in every phase of action; it will make him a better citizen, and not only a more sympathetic but also a more efficient member of society.

One of the urgent problems of the higher education in our day is how to secure an adequate measure of literary culture to those students whose primary concern is with scientific and technical pursuits. Some of the younger English universities, which give degrees in science, contribute to this purpose by providing certain options in the science curriculum; that is, a given number of scientific subjects being prescribed for study with a view to the degree of B.Sc., the candidate is allowed to substitute for one of these a subject taken from the arts curriculum, such, for instance, as the Theory and Practice of Education. This is the case in the University of Wales and in the University of Birmingham; and there are indications, I believe, that this example will be followed elsewhere. Considering how hard and sustained is the work exacted from students of science, pure or applied, it seems important that the subjects from which they are to derive their literary culture should be presented to them, not in a dry-as-dust fashion, not chiefly as subjects of examination, but rather as sources of recreation and changes of mental activity. From this point of view, for British students of science the best literature of the English language offers unequalled advantages. It may be mentioned that the Board of Education in London is giving particular

attention to the place which English literature should hold in the examination of students at the training colleges, and has under consideration carefully planned courses of study, in which portions of the best English writers of prose and of verse are prescribed to be read in connection with corresponding periods of English history, it being understood that the study of the literature shall be directed, not to philological or grammatical detail, but to the substance and meaning of the books, and to the leading characteristics of each writer's style. If, on the other hand, the student is to derive his literary culture, wholly or in part, from a foreign literature, ancient or modern, then it will be most desirable that, before leaving school, he should have surmounted the initial difficulties of grammar, and should have learned to read the foreign language with tolerable ease.

When we look at this problem—how to combine the scientific and the literary elements of culture—in the light of existing or prospective conditions in South Africa, it appears natural to suppose that, in a teaching university, the faculty of education would be that with which literary studies would be more particularly connected. And if students of practical sciences, such as engineering and agriculture, were brought together at the same centre where the faculty of education had its seat, then it should not be difficult, without unduly trenching on the time demanded by scientific or technical studies, to provide such students with facilities for some measure of good literary training.

A further subject is necessarily suggested by that with which we have been dealing—I mean the relation of university to secondary education; but on that I can only touch very briefly. Before university education can be widely efficient, it is indispensable that secondary education should be fairly well developed and organised. Secondary education should be intelligent—liberal in spirit—not too much trammelled by the somewhat mechanical uniformity apt to result from working for external examinations, but sufficiently elastic to allow for different aptitudes in the pupils, and to afford scope for the free initiative of able teachers. It is a gain for the continuity of education when a school-leaving examination can be accepted as giving admission to the university. Such an examination must be conducted under the authority of the university; but there is much to be said in favour of the view that, under proper safeguards, the school teachers should have a part in the examination; always provided that the ultimate control, and the decision in all cases of doubt, shall rest with the university. A system of school-leaving examinations for this country was earnestly advocated, I believe, by Mr. P. A. Barnett, who has achieved such excellent work for the cause of education in Natal. To discuss the advantages or difficulties of such a proposal, as they at present affect South Africa, would demand knowledge which I do not possess; and I must content myself with the expression of a hope that in days to come—perhaps in a not distant future—it may be found practicable to form such a link between the highest education and the grade next below it.

But the limit of time proper for a chairman's address has now almost been reached. I thank you sincerely for the kindness and patience with which you have heard me. In conclusion, I would only say how entirely I share a conviction which has been expressed by one to whose ability, to whose generous enthusiasm and unflagging efforts the cause of education in this country owes an incalculable debt—I refer to Mr. E. B. Sargent. Like him, I believe that the progress of education in all its grades, from the lowest to the highest, is the agency which, more surely than any other, will conduce to the prosperity and the unity of South Africa. For all workers in that great cause it must be an inspiring thought that they are

engaged in promoting the most fundamental and the most far-reaching of national interests. They are endeavouring to secure that the men and women to whom the future of this country belongs shall be equal to their responsibilities and worthy of their inheritance. In that endeavour the sympathies which they carry with them are world-wide. As we come to see, more and more clearly, that the highest education is not only a national but an Imperial concern, there is a growing desire for interchange of counsels and for active co-operation between the educational institutions of the Colonies and those of the mother country. The development of education in South Africa will command keen attention, and will be followed by earnest good wishes, not only in England, but throughout the British dominions. One of the ideas which are bound up with the history and the traditions of our English public schools and universities is the idea of efficient work for the State. Those institutions have been largely moulded, from generation to generation, by the aim of ensuring a supply of men qualified to bear a worthy part, either in the government of the nation or in professional activities which are indispensable to the national welfare. In our own time, and more especially within the last thirty years, one particular aspect of that idea is illustrated by the closer connections which have been formed between the universities and the higher branches of the Civil Service. The conception of work for the commonweal is in its turn inseparable from loyalty to those ideals of character and conduct by which English life and public policy have been built up. It is by the long and gradual training which such ideals have given that our race has been fitted to grapple with responsibilities which have inevitably grown, both in extent and in complexity, far beyond anything of which our forefathers could have dreamed. That training tends also to national self-knowledge; it makes for a sober estimate of our national qualities and defects; it quickens a national sense of duty to our neighbour. The munificence of a far-sighted statesman has provided that selected youths, whose homes are in this land, and whose life-work may be here, shall go for a while to England, shall breathe the intellectual and social atmosphere of a great English university, and shall learn to judge for themselves of the sources from which the best English traditions have flowed. That is excellent. But it is also most desirable that those traditions should pass as living forces into the higher teaching of South Africa itself, and that their spirit should animate educational institutions whose special forms have been moulded by local requirements. That, indeed, has been, and is, the fervent wish of men whose labours for South African education have already borne abundant fruit, and are destined to bear yet larger fruit in the future. May those labours prosper, and may that wish be fulfilled! The sooner will come the day when the inhabitants of this country, this country of vast and still indefinite possibilities, will be able to feel, in a sense higher and deeper than citizens of the Roman Empire could conceive, *Cuncti gens una sumus* ("We are all one people"). If the work which lies before us, in this Section of the British Association, should result in contributing anything towards the promotion of those great objects, by helping to elucidate the conditions of further progress, our deliberations will not have been held in vain.

DR. A. J. HERBERTSON, hon. sec. of the Geographical Association, has been appointed Reader in Geography in the University of Oxford, from October 1st, in succession to Mr. H. J. Mackinder, who has resigned the Readership to devote his whole time to the work of the London School of Economics.

HISTORY AND CURRENT EVENTS.

AN incident in the recent history of the Wesleyan Conference will help us to understand what was meant in the Middle Ages by "heresy" and by "excommunication." A Mr. Findlater brought charges against Wesleyan Missionaries in India; the Conference came to the conclusion that these charges were not proved. Mr. Findlater refused to accept this ruling, whereupon the Conference was "of opinion that his conduct was such as to merit exclusion from the ranks of the Wesleyan Methodist ministry." So in the Middle Ages, a thinker formulated an answer to one or more of the many then unsettled questions of theology. The theory attracted notice and was approved or disapproved by the ecclesiastical authorities. If disapproved, the theory was regarded as "heresy," and if the theorist were obstinate, he was regarded as a "heretic," and excommunicated. And as the Conference has given Mr. Findlater a year for consideration, so then, there were long delays before the "heretic" was finally "abandoned to the secular arm." There are differences, of course, but there are also parallels between the action of then and now.

"PARLIAMENT legislates; the ministers execute the laws; the judges administer justice." So say the text books, still following Montesquieu in believing that in Great Britain we have "separated the powers." Mr. Balfour, defending himself at the end of July against the charge of a "wasted session," pointed out that "twelve days had been devoted to the debate on the address, thirty-seven days had been given up to Supply business, two had been spent in discussing motions for the adjournment of the House, on three occasions there had been votes of censure, the Budget discussion and the Finance Bill had occupied twelve days, the Indian Budget one, and the election of the Speaker one. For general legislative work there had been twenty days." How do these two accounts of the work of Parliament agree? And this Session has not been extraordinary. The truth is that the House of Commons is really at work day by day, struggling to displace or maintain the ministers. That has come to be its work in these days, and our text books must come up to date.

FEDERATIONS are perhaps the most interesting subjects of historical study. The distribution of sovereign powers between the central and the local authorities affords constant play for the centripetal and centrifugal forces which, from one point of view at least, make up the history of political mankind. This summer has afforded us two examples in the two great English-speaking federations, the British Empire and the United States of America. Our Australian cousins are supremely interested in the Pacific islands and islets—so are Germany and France. With these powers, neither Australia nor the five States of which the Commonwealth is composed can have any direct dealing. And it is therefore interesting to observe their action in the matters of the New Hebrides and the Marshall Islands. As we read our papers, let us try to gather from their story a clear account of the constitutional powers of Great Britain, of Australia, and of (e.g.) New South Wales. The other incident is a kind of inchoate war between Mississippi and Louisiana, concerning the powers to regulate navigation on the great river there. What will the United States have to say in the matter?

WE are so much in the habit of seeing Protestantism and opposition to the Papacy in the actions of such men as Grosteste or Wiclif that we forget that they attacked not the Papacy as such but merely the abuses of it. "God amend the Pope," not end him, was the prayer of the author of *Piers Plowman*. The incident which inspired these remarks is an alleged attack

by Sir Robert Stout, Chief Justice of New Zealand, who is reported as saying "he was surprised that the Colonies endured that cases should be pending for two or three years before an appellate tribunal which sat thousands of miles away. . . . It was a matter for the Legislature to decide whether the whole industrial and commercial life of the Colonies should be subject to appeal to the Privy Council." Sir Robert is not disloyal to the British Empire; he attacks only what he regards as the inconveniences of its centralisation. Just so, the Englishmen who passed Statutes of Præmunire wished not to cut themselves adrift from Christendom, but merely to limit the inconveniences of journeys to Rome.

CANADA is going henceforth to give a salary to the leader of the Opposition. Sir W. Laurier, like Englishmen whenever they make changes, of course protests that it is "no new departure, but simply a new stage in the development of constitutional government." But it *is* a new thing, and yet reminds us of old things. Now and then, of late years, as we have mentioned in these columns, the word "cabinet" has crept into official documents. So recently as just a hundred years ago, the Whigs in office under Fox protested there was no such thing as a Cabinet. And as His Majesty's Ministers have changed gradually from the humble servants of the king that they were in Stuart times to the almighty secret committee they are now, so the "Opposition" has come to be recognised and "defeats of the government" are not so alarming here as they are in, e.g., South America. And now, to complete the development, comes an official recognition of the leader of the "rebels," and he is to have in Canada a salary paid by the Government which he opposes. Let this not be regarded by us as "of course."

ITEMS OF INTEREST.

GENERAL.

THE annual exhibition of designs, drawings and other art works which received awards at the National Competition remained on view in the galleries of the Indian section of the Victoria and Albert Museum throughout the month of August. The show consisted of 746 works—gaining nine gold medals, sixty-one silver medals, 249 bronze medals, and 427 book prizes, as well as specimens of exercises worked at the ordinary local examinations. The exhibition covers, as usual, pretty well every branch of art, and its most striking feature is the ever increasing number of specimens of works executed in the material for which they are designed which are sent up along with the drawings. And this is the case not only with such crafts as embroidery and stencilling, where the student can fairly easily be his own executant, but also in tiles, silk and linen damask, and other manufactured goods. Some years ago it was quite an exceptional thing to see the actual object exhibited side by side with the design, this year it is almost the rule. The difficulty of maintaining anything like a common standard in examinations conducted by different men who have little or no opportunity of comparing the work sent up in their own section with that submitted in other sections is made manifest by some of the higher awards this year. We fail to see in one or two instances that works obtaining a gold medal in one division are better, if as good, as those which in others are only so far successful as to obtain a silver medal. But, in spite of inevitable shortcomings, the show is not only extremely interesting as indicating what is being done in schools of art and art classes throughout the country,

but it is satisfactory as showing a really high level of drawing and design. It is rather instructive to read the particulars on the labels and to notice how much good, and even accomplished, work is sent in by younger competitors between the ages of fifteen and nineteen, work which is very far removed indeed from ordinary "school drawing."

"It is not too much to say in this regard (the common schools) that education has been the chief industry of the nation." This quotation, from a speech by Hon. Joseph Choate, late United States Ambassador to this country, receives ample confirmation in vol. 2 of the Report of the Commissioner of Education in the United States. The bulk of the publication consists of statistics drawn up by the U.S.A. Education Department, but included in its 1,200 pages is a mass of information that cannot but prove instructive to educationists in other countries. A chapter on The Courses of Study in German Schools is followed by a Report on the Chilean Educational Congress and Exhibit, 1902-3, from which we gather that no effort has been spared by the National Government to give the people the benefits of knowledge; even higher education being given gratuitously in Chile. An extremely able article is that by the President of Harvard University—The Expenditure for Popular Education justified by its Results. The Report on Education in Alaska is also interesting reading; in 1903 there were thirty-three public schools with 2,108 pupils on the rolls; their ages varied from five to twenty. With regard to the Philippines, the Americans are extending elementary education and instruction in English as far and as fast as possible. In 1903 there were about 2,000 primary schools, 723 American and 3,000 native teachers, and about 150,000 pupils. For the year ending June, 1903, there were 17,539,478 pupils in the schools and colleges of the United States, of whom only 776,635 were secondary students, being just under 1 per cent. of the population. The tendency has been for the public high schools to increase in numbers, whilst the private high schools appear to be growing fewer. In 1890 about 68 per cent. of the secondary students were in public high schools, and in 1903 over 85 per cent. In these thirteen years the number of public high schools has increased 169 per cent., from 2,525 to 6,800.

WE have received a copy of the second issue of *Vierteljahrsschrift für körperliche Erziehung*, the official organ of the Vienna Society for the promotion of outdoor games. The number opens with a paper by one of the editors on the prevention of sexual delinquency among school children. The writer, while looking forward to the school games and adequate playgrounds of the future to supply the natural preventive, also advocates explicit instruction (under parental sanction) either by a teacher or the school doctor, and suggests as the most opportune occasion the last hour before the summer holidays. An illustrated article describes the swimming instruction in the Elberfeld Volksschulen, the preliminary exercise taking place concurrently in the gymnasium on a campstool-like contrivance (Schwimmbock), from the upward projecting ends of which girths are slung, and in the bath where the pupils are suspended, sixteen at a time, from iron rods laid across the galleries. Free swimming follows with the aid of an oval tin box on the shoulders, the attachment being gradually loosened as confidence is gained. In an article on the equipment of a gymnasium we remark especially the insistence on the danger inherent in dust, and on the principle that the covered gymnasium should never be otherwise regarded than as a bad-weather substitute for the open air. Our best wishes to our Vienna colleagues and their journal. We notice, by the way, in a list of thirty-four new members of the Society the names of twenty teachers and ten doctors of medicine.

THE Education Committee of the London County Council has recommended that, subject to the instruction in the evening classes and school of art at the Goldsmiths' College, New Cross, being conducted during the school year, 1905-6, on the same lines as during 1904-5, and subject also to the college being managed by a joint delegacy consisting of representatives of the University of London and of the Council, a grant of £4,500 be made to the university in respect of the cost of conducting such classes. It will be remembered that, during the Session 1904-5, the greater part of the evening educational work at the Goldsmiths' College was carried on with the aid of a special donation of £5,000 made by the Goldsmiths' Company over and above their normal grant of £5,000. Owing to the opening, in September next, of the new training department of the College which will be part of the University of London, some of the classes will have to be discontinued. To provide for the maintenance of the remaining classes, and for the institution of means of instruction of university character in chemistry, physics and mathematics, with the possible subsequent addition of other scientific subjects, the university has asked the Council for a grant of money.

THE larger part of the new block of buildings just completed for Westminster School is occupied by new laboratories, which in the coming term should be found a very agreeable contrast to the old quarters, where the equipment and accommodation, particularly as regards the teaching of physics, had become quite inadequate. The physical department on the ground floor consists of a good-sized lecture-room with communication behind the lecture-table, with a preparation room and small workshop for repairs connected with the laboratory, which has accommodation for twenty-four boys at twelve tables, all having a good cross light and facing a small, slightly raised demonstration table. This room also contains a large, lead-covered sink bench, fume cupboard, apparatus cupboards, and balance shelves, and one of Fletcher's useful water-heaters. The electrical arrangements for this room and for the lecture-rooms have been given special consideration. A switchboard (exposed at the back) supplies current from the mains at two hundred volts to the boys' tables and lecture-rooms, and a mercury board, which is only fourteen inches square, has been arranged in the top of the demonstrators' table, connected to cells which give another similar low tension distribution. The addition of a lamp and a large, variable, platinoid resistance, which can be used with both systems and for charging the cells, admits of the supply of any desired current up to ten amperes at from two to eight or two hundred volts, thus doing away with the difficulties of primary cells.

THE chemical department on the first floor follows the plan of the rooms below, the communicating rooms being in this case a balance-room and masters' small research room. Special efforts have been made to render the fume cupboards cleanly by forming the bottoms of shallow glazed-ware sinks and the sides and backs of glazed bricks and slabs. In the chemical laboratory there are three double and one single cross-lighted benches for twenty-four workers, with a space on the former of four feet per boy, and three lockers and drawers under each. The bench drainage is formed of an open, glazed ware channel accessible from the ends of the benches and by removing the backs of the lockers. This room also contains a bench for general work and for storing apparatus, a stone table and flue over for a muffle and a combined still and ovens (by Messrs. Brown).

ARRANGEMENTS exist for the use of a lantern in each lecture-room, and the blackboards are hung on the Kelvin principle and without side guides, which cause so much friction in long and narrow boards. On an upper floor is a good-sized pre-

paration and store-room and a dark room for photography and optical work. The basement is arranged as a metallurgical laboratory, a somewhat unusual feature in a school, but installed partly for research and partly to admit of a few senior boys obtaining some knowledge of reactions at high temperatures. It contains one wind and one muffle furnace (which, with a shaft of nearly seventy feet, should vie with many in larger institutions), and the usual adjuncts—a rolling mill, bench with shears, balance-table, and shelving. All the laboratory and lecture-room fittings have been executed by Messrs. H. Potter and Son, of Chelmsford, in pitchpine and teak; the metal fittings are bronzed to a dark tint, and exposed pipes are covered with aluminium paint. The drawings and specifications required in the design of the laboratory fittings and the whole supervision of this undertaking have been in the hands of Mr. A. E. Munby, formerly science master at Felsted School and now in practice as an architect; and the whole work has been carried out in consultation with the Rev. E. C. Sherwood, the senior science master at Westminster. The governors and the headmaster, Dr. Gow, are to be congratulated upon the valuable addition made to the resources of their school by the satisfactory construction of the new laboratories.

THE whole of the secondary education of the City of Leeds is to be co-ordinated. It is proposed to divide the existing places of instruction into four grades: (1) preparatory evening schools, (2) branch artisan and commercial schools and young women's institutes, (3) advanced institutions, (4) the University of Leeds. At present there is not a day technical institute in Leeds, and the Mechanics' Institute is already too full. It is intended to start three preparatory trade schools—artisan, commercial, and domestic day schools. The artisan day schools will prepare boys to become skilled workmen. The day technical institute will provide the foremen and managers, whilst the university is looked upon as the source of supply for the master minds—the men who are to be captains of industry. A start is to be made with two industries—engineering and building. Such "trade" schools are well known and appreciated in America and on the Continent, and the new departure will be watched with interest.

SPEAKING on the Education Estimates, Sir W. Anson, in alluding to secondary education, pointed out that the inspectorate had been increased from three to eighteen. There was no prospect of a Government grant for training colleges for secondary teachers, and little had been done in the past year in that direction. On the other hand, considerable modification had been introduced into the system of grants, which, three years ago, unduly favoured the teaching of science at the expense of general education. Now, the object is to provide a general education in which science plays a proper part, and at a certain stage the student may specialise in the direction of advanced science, or the direction of languages. Instead of grants being given for scholarship purposes, they are now given to the schools.

At the annual meeting of the Society of Art Masters, Mr. F. Marriott, the chairman, said that the establishment of schools of art had resulted in the building-up of a British school of design from which it had followed that foreign manufacturers were now coming to us for designs—a reversal of the practice that was in vogue formerly. If we were to improve our artistic industries to the same extent as we had improved our design, we must make our designers craftsmen, and our craftsmen designers. He looked forward to the time when every art school should be a kind of guild of art craftsmen. There are now 260 members of the society.

THE Apportion of St. Paul's School this year received additional interest from the retirement of Mr. F. W. Walker, the High Master. Mr. Walker has been at St. Paul's since 1876, and, as he said, in that time, thanks to the cordial co-operation of the governing body, his colleagues, and the boys' parents, the school has been raised to the place of the premier day school in England. His satisfaction with the present state of affairs was tempered somewhat by the reflection that for the last twenty years there had been no development or improvement in St. Paul's as a place of education—a misfortune which he attributed to his own personal qualities. His successor, of whom he had heard nothing but good, would, he hoped, have a freer hand than he had had. In presenting a gold loving cup to Mr. Walker, on behalf of the Mercers' Company, the Chairman said they had listened with very great interest to his last words.

THE London County Council is arranging to provide classes at university colleges for teachers who are not preparing for an examination, but wish to widen and deepen their interest in various subjects. The courses, which will be free, and open to all classes of teachers, commence early in October, and include lectures in English and modern languages, literature, history, mathematics, education, regional geography, &c. Syllabuses of the instruction to be provided will be submitted before any lectures are delivered.

IN accordance with the recommendations of its Education Committee, the London County Council has granted Mr. W. H. Winch, district inspector, two years' leave of absence. Mr. Winch expressed a desire to carry on psychological investigations in schools here and in America, to which latter country he will at once proceed. He has also been accorded permission to conduct his researches in schools under the control of the Council, and, in the event of there being a vacancy in the staff of district inspectors at the end of the period, he is, if he chooses, to be reinstated in his former position. Should there be no vacancy, the Council has promised to consider favourably an application for his appointment in some other branch of its educational work.

INTERESTING in many respects is the New South Wales report on education. We would especially draw the attention of our readers to the remarks on ambidexterity by Mr. J. E. Branch, superintendent of drawing:—"To use either hand more frequently than at present is the custom, by the better co-ordination of the motor centres thus effected, should tend to diminish that partial paralysis of the mind and body instances of which, in these days of high specialisation, seem to be increasing."

"BRAIN Fag in Children" was the title of a paper read by Dr. T. Hyslop, senior physician of Bethlehem Royal Hospital, at the Congress of the Royal Institute of Public Health. Dr. Hyslop said that the enforcement of brain effort at an early age was so damaging to the mental development and stability of the mind that the methods now demanded by the Legislature are surely and certainly aiding in the brain suicide of our race. Learning by rote was specially harmful, and was a prolific source of mental weakness; and greatly to be reprehended was the waste of time and energy involved in grappling with the intricacies of our tables of money, weights and measures. The Rev. R. S. de Courcy Laffan bore testimony to the deleterious effects on the minds and health of the young of the system of competitive examinations.

IN this connection it may be of interest to reproduce some of the remarks in the recently-issued "Suggestions for the Consideration of Teachers in Public Elementary Schools."

"Examinations are at best a concession to the weakness of human memory and understanding. If everything we learned was immediately assimilated, placed in its right relation to the rest of our knowledge and never forgotten, the purpose of examinations would be gone." Again: "Examinations conducted by external authorities are an interruption to continuous school work: unless they are most intimately related to the work which has been done both in and out of the class they have a tendency to divert the scholar, not merely from discursive and aimless wandering in the field of knowledge, but from all study but such as can be reproduced in competitive display; and they encourage a knack of presenting knowledge in compact and handy forms which tends to make the scholar forget or disparage the larger forms of study."

SPEAKING at the annual opening of the Passmore Edwards Vacation School, Lord Londonderry moved a resolution that the system of vacation schools should be extended in London and our large towns generally. Something like 300 such schools would be needed in London, and the cost would be about £60,000 a year. He could not hold out any hope that the ratepayers should be made to pay for vacation schools, and it would be too much to expect that voluntary agency would find the necessary money. Mr. Mosely said it was for the Government, through the Board of Education and the county councils, to realise that the children who could not go away had a claim upon the people to be taught some useful occupation and to be given some amusement during the holidays.

LAST month we gave the gist of the preliminary report of the Departmental Committee on the Royal College of Science. It will be remembered that the report outlined a scheme for the foundation of a great technical school at South Kensington, embracing the Royal College of Science, the Royal School of Mines, and the Central Technical College. Prof. Karl Pearson has written to the *Times* protesting against the scheme. He points out that such an institution practically means the concentration of technical instruction of the higher kind in London in an institute which is not under the full control of the University of London, and thus it makes a breach between technical and academic students which is wholly undesirable. The one point of organisation where we are superior to the Germans will be lost if we have in London a polytechnic high school divorced from general university life. According to Prof. Pearson, it is absolutely necessary for the future higher technical instruction of London to be under the complete control of the university.

AN experiment of a novel kind is being tried in New York. The Hamilton Fish Park has for some time past occasioned the municipal authorities much trouble on account of the number of boys and girls who frequented it, necessitating the employment of many gardeners and attendants. It has been handed over to the children themselves as "The Playground City." The charter of incorporation provides for departments of "police, sanitation, finance, athletics and games." There was, after a week's "campaign," a ballot for the election of the mayor and other corporation officials—the voting powers being confined to boys. Skill in games seems to have been the chief qualification for office, though politics were not absent from the candidates' addresses and meetings. Much interest attaches to the new development.

A TREASURY Minute upon the recommendations of the university colleges committees has been issued as a parliamentary paper. The recommendation of the establishment of a permanent committee to advise the Board of Treasury as to the distribution of the grant in aid is accepted, and an endeavour

will be made in the autumn to constitute such a body, which will perform the duties hitherto undertaken by the quinquennial committee of inspection. Ninety per cent. of the grant is in the future to be allocated on the same general principles as have been adopted hitherto, and such sums as may be given will be secured to the colleges for at least five years. The balance of the grant will be reserved partly for special grants towards the provision of books and apparatus and partly for the encouragement of post-graduate work. The colleges will be expected to make proposals to the advisory committee as regards post-graduate work, showing the nature of the work it is desired to undertake and the assistance the college itself intends to contribute to the work. Parliament is being asked to vote £100,000 for university colleges, and if this is agreed to £89,000 will be distributed, and £11,000 reserved for allocation in March next. The amount allotted to each college for the year 1905-6 will be as follows: Manchester, £12,000; University College, London, £10,000; Liverpool, £10,000; Birmingham, £9,000; Leeds, £8,000; King's College, London, £7,800; Newcastle-on-Tyne, £6,000; Nottingham, £5,800; Sheffield, £4,600; Bedford College, London, £4,000; Bristol, £4,000; Reading, £3,400; Southampton, £3,400; Dundee, £1,000.

MISS BARBARA FOXLEY, who has been headmistress of Queen Mary's College, Walsall, for twelve years, is to undertake some temporary work in the University of Manchester during the next session, assisting especially in the training of diploma students. Miss Foxley's work as a headmistress and as an active organiser in education is widely known and appreciated, and her assistance will, no doubt, be of great value in the department of education next year.

MISS CATHERINE DODD, mistress of method, in the department of education of the University of Manchester, has been appointed Principal of Cherwell Training College, Oxford.

THE REV. H. BUCHANAN-RYLEY has been appointed Headmaster of the United Westminster Schools. There were sixty-eight candidates for the post.

MR. W. JENKYN THOMAS, Headmaster of Aberdare County School, has been appointed Headmaster of Hackney Downs Grammar School (formerly the Grocers' School).

MR. J. F. UNSTEAD has been appointed Lecturer in Geography in the new Training College at the Goldsmiths' Institute, under the University of London.

SCOTTISH.

THE Convention of Royal Burghs forwarded recently to the Secretary for Scotland a representation urging that steps be taken to see that in school history books a more adequate and accurate account be given of the important events in Scottish history; that these events should be presented from an authentic Scottish point of view; and that in books dealing with British history after the union, the words "British" and "Britain," not "English" and "England," be used whenever the United Kingdom or its affairs are referred to. In support of their case, the Convention submit a merciless analysis of some of the histories in common use in Scottish schools, and convict them of the most flagrant errors of omission and commission. Great Britain is always referred to as "England"; the British throne is called the "English" throne, and the British flag the "English" flag, and even such typical Scots as David Livingstone, Adam Smith and James Watt, are dubbed Englishmen. All Scotsmen will heartily support the action of the Convention in taking up this subject and insisting on accuracy of nomenclature in the interests of historical truth as well as of national patriotism.

THE Secretary for Scotland in acknowledging the receipt of the memorandum states that it is a matter for regret that errors such as those to which attention was called should be of frequent occurrence in several of the school books in use in Scotland. In view of the importance of the matter, it is proposed to direct inspectors of schools to make special enquiry as to the treatment accorded to these national questions in the text-books, and where, without raising pedantic objections, they find such treatment either to be inaccurate or seriously inadequate, to report the circumstances to the Education Department for further consideration. The Convention of Royal Burghs have every reason to be satisfied with this reply, which goes even further than they asked. It is hoped inspectors will take particular note of the words *without raising pedantic objections*, or we will have some ultra-patriotic member of the staff objecting to such phrases as the "English language." There are many cases when "England" and "English" may quite appropriately be used as descriptive of the combined countries, just as there are many others when their use would be not only inaccurate, but offensive.

PROF. DARROCH, speaking at the annual dinner of the Edinburgh Merchant Company Schools, said that the State had done nothing for higher education in Scotland, and the two Education Bills which were framed more particularly in the interests of higher education had come to nothing. All that they could show for them was two years of useless labours, two years of abortive conferences, and two years of weary pilgrimages to London. Prof. Darroch further emphasised the fact so frequently pointed out in these columns, that the rural districts were now more inadequately supplied with facilities for higher education than in the days of the old parish schools. The Education Bill would have done much to remedy this state of matters, but as it was, Scotland was now placed in such a position that it would take her years to get on equal terms with England in higher education.

AN action has just been concluded before the Lord President of the Court of Session and a jury, in which three members of Tarbert School Board claimed £250 damages each against the *Educational News* for slander. The action arose out of certain comments made by the *News* in a leading article on the dismissal of the local teacher. The Lord President in his charge to the jury said that those who went into public life in this country could not afford to indulge in the luxury of a very thin skin, and no one could doubt that it was for the public benefit that those who took public positions should be subjected to free criticism. At the same time a free Press must not be debased into a license for unfair attacks on private individuals, and then he proceeded to lay down what constituted unfair or malicious criticism. In the course of his charge he took occasion to pillory the extraordinary pettiness of feeling that marks village life in general, and from which the schoolmasters are frequently the greatest sufferers. Tarbert, he supposed, was no worse than other places, but it was the curse of small places that people seemed to have so little to do that they occupied most of their time quarrelling and talking about each other's characters. The jury returned a unanimous verdict in favour of the defendants, the *Educational News*.

THE doom of the Education (Scotland) Bill was officially sealed in the early hours of August 9th, when the motion was made that the Bill be discharged, and not a single voice was raised against it. Of course, the Bill had been dead for weeks, if not for months, before this, and indeed ever since its late introduction it seemed to many that "it hath a name that it liveth but is dead." It is useless trying to fix responsibility for its untoward fate. Government and Opposition would each fain make the other the scapegoat. But friends of education cry,

"a plague on both your houses," and regard both parties as enemies to their cause. If the Government had been in earnest, facilities for framing the Bill would have been found, and if the Opposition had looked to national, rather than party, interests, they would have seen that the facilities were provided. Scotland must trust for some years yet, it is to be feared, to the bold initiative of a much-criticised Education Department for any progress toward co-ordination of educational effort. She has had to do so during many past years, and on the whole she has been admirably served.

MR. ARCHIBALD LANG, mathematical and science master in Provanside Higher Grade Public School, Glasgow, has been appointed to the post of junior inspector, rendered vacant by the resignation of Mr. J. W. Peck.

IRISH.

THE Report of the Intermediate Education Board for 1904, which has lately been published, contains some interesting features. The most important is the official statement of the Commissioners concerning inspection. At the end of 1904 the scheme of the Board for permanent inspection had been before the Lord Lieutenant for two years and a half. Its principle has not been disputed, but refusal to recommend it has been based on two grounds. In the first instance, it was not accompanied by a proposal to reduce the expenditure for examination by an amount equivalent to that required for inspection. When the Board urged that the Act of Parliament did not allow the abolition of examination, the Lord Lieutenant thought the whole question should stand over for fuller consideration in connection with other educational questions. Meantime the Board refused to avail itself of an offer to appoint more temporary inspectors, as such a makeshift expedient was not of any advantage. The second ground of refusal was that the question of establishing a system of inspection conducted by a staff of permanent civil servants would not be entertained until the parts which examination and inspection should play in the distribution of State aid in the schools had been settled. This would require an Act of Parliament of which there is no sign at present. The Board have protested, but in vain, that, as inspection must under any scheme remain a permanent factor, the appointment of inspectors ought not to be delayed.

THE numbers of students examined in 1904 were: Boys, 6,276; girls, 2,254; total, 8,530. And the numbers that passed: Boys, 3,934; girls, 1,464; total, 5,398; the percentage being: Boys, 62.7; girls, 65; total, 63.3. The percentage for the previous four years has been: 1900, 69.8; 1901, 65.7; 1902, 58.9; 1903, 62.1. The amount of the school grant paid to managers was £57,982, and was divided among 275 schools. The highest grant to any single boys' school was £1,813 to the Christian Schools, North Richmond Street, Dublin; and to any single girls' school £827 to the Dominican College, Eccles Street, Dublin. Boys' schools received in all £40,678, and girls' schools, £13,741. Mixed schools received £3,563.

Two hundred and ninety-four exhibitions were awarded, varying from £50 to £10, forty-four (thirty-one to boys and thirteen to girls) in the senior grade, seventy one (sixty to boys and eleven to girls) in the middle, and 179 (138 to boys and forty-one to girls) in the junior. In the classical course forty-three were awarded to boys and one to girls; in the modern literary sixty-five to boys and forty-six to girls; in the mathematical sixty-four to boys and six to girls; and in the experimental science fifty-seven to boys and twelve to girls. The total amount spent in exhibitions and money prizes was

£6,271; the preparatory grade prize fund amounted to £1,514; £1,064 was spent in medals and minor prizes; special bonuses were awarded to schools for choirs and orchestras amounting to £1,187, and £2,315 were advanced to managers of schools.

THE rules and programme of the Intermediate Board for 1906 were not published this year until after the schools had broken up for the summer vacation. So late a publication is inexcusable. There are several new features, which do not, however, on the whole, tend to simplify an already too elaborate syllabus. An old subject—natural philosophy—has been reintroduced into the middle and senior grades for pass, but not for honours. Arithmetic and algebra count as two separate subjects throughout, but the former only for pass. The modern literary course is subdivided into two divisions, one division embracing French or German and Irish, and the other French and German, as compulsory subjects. The selection of a course is, however, only compulsory for candidates for exhibitions. To pass in English literature and composition a student must obtain at least 30 per cent. in English literature and 30 per cent. in composition. The rule has been extended to the preparatory grade that a student will be allowed a pass who obtains less than 30 per cent., but over 25 per cent., in any one paper if his aggregate averages over 30 per cent. The maximum value of exhibitions has been reduced in the junior grade from £20 to £15, in the middle from £30 to £25, and in the senior from £50 to £40. Candidates for exhibitions are to have, according to the course, an extra and more searching paper in each of what are called their main subjects, the marks for this paper to be as many as for the corresponding honour paper. There are new rules for music and for choirs and orchestras. The apportioning of marks has been revised in many of the subjects. Greek composition has been reintroduced in the preparatory grade. Geometry has been divided into two parts, theoretical counting 80 per cent. and practical counting 20 per cent. Verse authors have been introduced into the Latin course in the preparatory and junior grades, and set books have been reintroduced in the middle grade for pass candidates in all languages. The history courses have been altered. In shorthand any system is allowed.

THE Department of Agriculture and Technical Instruction has issued a separate pamphlet its programme of experimental science, drawing, manual instruction, and domestic economy for day secondary schools for 1905-6. For the first time all the regulations and syllabuses have been gathered into a single volume—a great advantage to teachers and public. In the regulations themselves there is little change, the most important alterations being in regard to the subject of domestic economy, which may now be taken alone as a separate special course for the third and fourth years. The attention of teachers is specially called to the preparatory note, which has been rewritten. The syllabus of the special course—chemistry—has been revised. The grants will continue to be given as the result of inspection, but the rates of payment may be increased by one-tenth, or reduced by one or more tenths, as the Department, on receipt of the inspector's report, may determine.

THE training of teachers for girls' schools is being provided for during the forthcoming educational year both in Dublin and Cork. A mistress of method is being appointed in Alexandra College, Dublin, and a training department carried on in connection with the department for the training of teachers established by the Board of Trinity College. In Cork the work is being taken up by the Queen's College in co-operation with Miss Martin, the headmistress of the High School for Girls.

THE Department in July arranged lectures for the advantage of the teachers who were taking the summer courses in Dublin. Mr. George Fletcher, Assistant Secretary of the Department, delivered one on the "Method in Science Teaching," and Mr. Henry Cadness, of the School of Art, Manchester, delivered a series of six on the "Aims and Methods of Teaching Drawing." At the same time an exhibition was on view of drawings and art work representative of the work done in Irish day secondary schools, schools of art, and art classes.

WELSH.

MR. J. L. HOLLAND, Secretary for Education to the County Council of Northamptonshire, and member of the Teachers' Registration Council, has made his report on the enquiry he was asked to undertake with regard to educational facilities in Newport, Monmouthshire. It contains a painstaking survey of secondary and primary education in the borough. It deals with the problem of the supply and training of pupil teachers. Mr. Holland's chief suggestions are: Keep the intermediate schools up to their best efficiency; do not lower fees; extend the preparation given for entering the engineering industries; establish Borough relations with the semi-public and private efficient schools, when duly inspected; establish a higher elementary school for about 300 boys and 300 girls; offer bursaries in the intermediate or higher elementary schools for intending teachers; establish a pupil teachers' half-time class at the Boys' Intermediate School, and a one-year preparatory class for girls only at the top of the Higher Elementary School; reorganise the present pupil teachers' centre for girls only, and staff it entirely with women teachers. Other recommendations follow for evening continuation schools, the technical college, art instruction, scholarships, elementary schools, and an educational directory. Mr. Holland recommends the Committee to make an annual grant of £200 to the funds of the University College of South Wales and Monmouthshire, at Cardiff. This would secure five free studentships at the College, and entitle the Borough to a representative on the Executive Council of the College. Altogether, Mr. Holland has produced a most valuable, suggestive, and stimulative report.

THE following report was made to the Welsh Campaign Committee, at Shrewsbury, with regard to the policy of withdrawal of children from the voluntary schools: This matter has received the serious consideration of the County Committee and also of the various district committees. At Dolgelley twenty Nonconformist children have been removed from the National to the Council School, and other withdrawals will shortly follow. At Llanelltyd twenty-four Nonconformist children have been removed from the National School, and are being conveyed daily to the Dolgelley Council School, dinner being there provided for them. Only eight or nine pupils now attend the National School. St. Thomas, Trawsfynydd, twenty-nine children have been removed from this school and are conveyed daily to the Council School. Llandecwyn, seventeen pupils attend the emergency school, leaving only five attending the Church school. An emergency school has been opened at Llandecwyn, and steps are being taken at Trawsfynydd to provide an emergency school close to the present National School. At Carrog, Corwen, arrangements are being made to open an emergency school at the Baptist and Methodist schoolrooms, Plas Adda, Corwen. Nonconformist children will be conveyed to Corwen pending the erection of an emergency school. It is proposed to erect emergency schools at Carrog, Plas Adda, Llanegryne, Bryncoedifar, and Llanfachreth, and unless the present schools are transferred emergency schools will be erected also at Maentarog, Tynant, and Llawrybettws.

THE third annual holiday course of instruction in Welsh, a course organised by the Welsh Language Society, was held this year at Cardiff. The object of the course is to provide teachers in secondary and primary schools, as well as other students, with a knowledge, at least in outline, of the construction, grammar and literature of the Welsh language, and also to suggest methods of teaching Welsh suitable for its various schools. The Glamorganshire County Council granted thirty scholarships of £2 each, the Rhondda Council granted ten, and a number were given by the Denbighshire Council. Last year one hundred and seventy students were enrolled at the Bangor meeting, but this year the number dropped to fifty-nine. Prof. Powel, in his inaugural lecture, suggested that winter courses in Welsh should be established in all centres of population in Wales by the education authorities. Mr. J. T. Jones, of Dowlais, lectured on the direct methods of teaching Welsh, illustrating his views by practical teaching given to a class of English boys.

THE Board of Education has communicated to the Montgomeryshire Education Committee its cognisance of the non-payment by the Committee of the salaries to the teachers in the mixed department and in the infants' department of the Newtown National School. The salaries were due on June 30, for the work done in the previous quarter. The Board is informed that the managers sent the committee specifications of the works of repairs proposed to be done, on June 15, that the contracts had been let, and the work was to be begun in July—the first day of the summer holidays. The committee was reminded that in the summer of 1904 many teachers in the county were subjected to great hardships at the commencement of their holidays by the withholding of the salaries which were due to them for their services during the previous quarter. The Board asks for an intimation after the next meeting of the committee that the salaries hitherto withheld have been paid, and also for an explanation with regard to the withholding of teachers' salaries at the Montgomery, Kerry and Sarn National Schools. A resolution was proposed: The committee recommend the County Council to transfer £2,799 8s. 7d. from the elementary education account to the Education Committee, to meet the claims and salaries of the non-provided schools. This was rejected by twenty-nine votes to thirteen.

IN two years' time the Oswestry School will celebrate the quinquenary of its foundation. At the last prize-day gathering, Lord Harlech, the Chairman of the School Governors, laid the foundation stone of a chemical laboratory, which is being built at a cost of £1,000, an offering of an *alumnus* of the school. On the occasion a gift was announced of £250 for equipping the laboratory, from the Rev. Ambrose Short, Headmaster of the school from 1863 to 1870.

AT a meeting of the Glamorganshire Education Committee it has been decided by a large majority that the education of pupil teachers be provided for in the County schools. It was stated in the course of discussion that nearly every County school was over-crowded, but it was pointed out in answer that if the existing County schools were enlarged, it would be as good a method of meeting the difficulty as that of building special schools.

A PRIZE is being offered by Principal Reichel, of University College of North Wales, Bangor, for the best college song in Welsh, capable of being sung to one of three Welsh airs named.

AT Llangollen County School it has been decided to increase the facilities for manual training in the departments of cooking and laundry work.

RECENT SCHOOL BOOKS AND APPARATUS.

Classics.

Harvard Lectures on the Revival of Learning. By Dr. John Edwin Sandys. xvi. + 212 pp. (Cambridge University Press.) 4s. 6d. net.—We lately reviewed in these pages the first part of Dr. Sandys's "History of European Scholarship"; the present book is an anticipatory taste of the second. Its chapters are as follows: Petrarch and Boccaccio, The Age of Discoveries, Theory and Practice of Education, the Academies of Florence, Venice, Naples and Rome, the Homes of Humanism, the History of Ciceronianism, the Study of Greek. Talk about books may be very dull; duller still talk about those who have talked about books. But Dr. Sandys is not dull. A little stiff, perhaps, sometimes in style even ponderous; but he has such a fund of pertinent information and such a happy knack of connecting the past with the present that, although we see his points coming before he makes them, they give pleasure all the same. Dr. Sandys loses no opportunity of drawing out the intellectual connection between Harvard and the older (dare we say greater?) Cambridge: this interests Englishmen as much as it does their cousins over the water. It is something to realise how great is the debt which Europe owes to ancient learning. And what a time that must have been when any day might discover some unknown manuscript, Cicero's "Letters," or Livy, or the still more precious treasures of Greece! Dr. Sandys takes us not only into the scholar's closet, but into the printing office of the great Aldus. We commend to modern publishers the following notice once affixed to Aldus's door: "Whosoever thou art, Aldus strictly chargeth thee, if thou desirest aught of him, to do thy business in briefest wise, and then at once to depart; save haply thou comest, even as Hercules unto weary Atlas, ready to bear his burden on thy shoulders; if so, there will ever be enough to do, both for thyself and for as many as bend their steps hitherward." The scholarly traveller—a few, perhaps, may be still left—might do worse than to take this book with him on a tour to Venice, Florence, Rome, and other Italian sites sacred to the memory of the great dead.

Thucydides. Book VI. Edited, with Introduction and Notes, by A. W. Spratt. xlv. + 407 pp. (Cambridge University Press.) 6s.—Mr. Spratt has followed up his edition of Book III. with Book VI., which is written on the same scale and in the same general character. Part of the introduction is a sketch of Sicilian history; but we would call special attention to the section on the "Order of Words in Thucydides." Everyone knows that Thucydides is erratic as compared with the Attics; but Mr. Spratt shows that he is more consistent with himself than might at first sight appear. Critical notes are appended to the text, and the commentary comprises no less than 370 pages. It must be admitted that Mr. Spratt has not altogether avoided the fault of giving too much; some of his notes are so elementary that their presence surprises us. We cannot always agree with his interpretations (*e.g.*, on x., 5), but when he speaks of Thucydidean usage we acknowledge the master. How precious are the scraps of Shilleto which appear here and there, *rari nantes!*

The Iliad of Homer. Book XXIV. Translated by E. H. Blakeney. 39 pp. (Bell's Classical Translations.) 1s.—This translation is done in the Biblical style, which is kept up with very fair success. It would call for no special remark but that the translator has added a number of notes or jottings, illustrations of the allusions or figures contained in the text. We cannot see the use of these. They are not the choice of a large

store, but apparently such illustrations as the translator has happened to meet with. Thus, on the "Steam of Sacrifice," surely an ordinary idea, he quotes St. Paul's Epistle to the Ephesians, v. 2; for casting dust on the head, Josephus *Bell. Jud.*, ii., 21-3. When Priam gives Achilles *πέπλοι*, he remarks: "Doubtless Achilles could make use of such robes as presents to his women captives." He also thinks that "the omission of the article" in Homer is "remarkable" (p. 22). And if we can say Priam, why *Olumpos*?

Greek Reader. Vol. I. Selected and adapted with English notes from Prof. von Wilamowitz-Möllendorff's *griechische Lesebuch*. By E. C. Marchant. v. + 85 pp. (Clarendon Press.) 2s.—It is not often that the reviewer of school books has so delightful a surprise as this book has given to us. The extracts consist of a number of "maxims and anecdotes," Alexander's Battle with Porus, Strabo's Description of Britain, Hero's Galleon from Athenaeus, and a piece of Thucydides. So far good, these are not hackneyed pieces, and all have interest; but the gem of the collection is a piece called "The Hunter," which gives a quite charming sketch of Greek country life, by Dion Chrysostom. It is quite the best piece of simple Greek we have ever read of its kind. We recommend this book to every boy or girl, man or woman, who can read the Greek alphabet. We had almost forgotten to say that there are brightly written introductions and notes; but what do they matter? Let every one read "The Hunter."

Sexti Propertii Opera Omnia, with a Commentary. By H. E. Butler. vi. + 415 pp. (Constable.) 8s. 6d. net.—*Nonum prematur in annum.* How often one thinks of that sound advice when reading new books! Mr. Butler would have done well to remember it. Not that this is a bad book; far from it; this is a very useful book, one which will probably become the "Propertius" in regular use for English students, unless Prof. Postgate produces a *magnum opus*. But there are many signs that Mr. Butler lacks the ripeness of judgment which comes of full knowledge and long meditation. He has admirable qualities, clearness and industry, and he has a wide acquaintance with recent work on "Propertius"; we cannot help feeling that he has it in him to make a better book of his "Propertius." It is particularly to be regretted, because the editor of "Propertius" must deal with critical questions, and questions of the greatest difficulty. For this task no one is competent without many years of preparation, and he needs a very calm and sound judgment united with sustained attention. Nevertheless, we would repeat that this is a book likely to be found useful by English students. They must, however, use their own judgment carefully in using the book. Try all things: hold fast that which is true.

English.

Shakespeare's King Henry the Fifth. By W. H. Hudson. xlv. + text + liv. pp. (Dent.) 1s. 4s. net.—By adding this edition of King Henry V. to their well known school edition of Shakespeare, the publishers of this book have rendered one more service to teachers of Shakespeare which we believe educationists will not be slow to appreciate. Prof. Hudson has supplied an introduction which follows the general lines of those prefixed to former volumes in this series, but is in itself a valuable piece of work. For instance, a section (brief enough) in the growth of Shakespeare's genius, a masterly analysis of the play, and some really well put remarks upon prosody, ought to be taken account of in any estimate of this production; and the criticism of the general characteristics of the play is sound and lucid. The text is clearly printed, and the notes are admirably condensed, though they are numerous. They are also well

illustrated, as is also the glossary to be found at the end. No small praise is due to Miss Dora Curtis for her seven illustrations and the coloured frontispiece, in which, however, Henry V. is represented in an attitude which hardly does him justice even in the character of a lover.

Dante and Virgil. By H. M. Beatty. 99 pp. (Blackie.) 2s. 6d. net.—This dainty and elegant little book matches its outward presentation with the literary grace of its textual contents. It is indeed a valuable and worthy piece of literary criticism of the higher and better kind. Dr. Beatty traces the relation of Virgil as conceived by Dante with what we know of him authentically in symbolism and in the mediæval notions of him. He thinks that to Dante Virgil stood rather as the author of the *Æneid* than as an historic personage. He was Dante's favourite poet; he symbolised ancient literature; and he stood for the grandeur and permanence of the Roman Empire. The great Florentine accepted the views of his age as to the prophetic character of the Mantuan poet, but was not bitten by those traditions of magical powers ascribed to Virgil which were current in his day. The chapter which deals in detail with the mediæval Virgil is intensely interesting, and the literary style of the book throughout is charming and telling at once. It is a small work, but it is not one of the least valuable on its subject. A list of authorities at the end has been selected with great care.

A Day at Dulwich. By A. H. Gilkes. 124 pp. (Longmans.) 1s. net.—The headmaster of Dulwich has added to his two previous little literary ventures a third shillingworth, in which the inner life of Dulwich College is set forth in a sympathetic and not too sentimental way. Occasionally Mr. Gilkes steers close to this prevalent characteristic of much that is written about schools; but, on the whole, he avoids it with success, and also makes his account of Dulwich life interesting. Needless to say it will be read by all old boys and present boys at this particular school, and, at least for purposes of comparison, probably by members of other public schools also. The book is not dull anywhere, and contains many discussions of important points in national and educational life, put for the most part into the mouths of the assistant-masters of this school. We would earnestly commend to attention the account of the Greek view of life which commences on page 50. If this be laid to heart, a great improvement in the *ethos* of Anglo-Saxondom may follow in due time.

Stories of Robin Hood. By I. W. M'Spadden. xvi. + 240 pp. (Harrop.) 1s. 6d.—The author of this reading-book has evidently made a considerable study of the Robin Hood ballads, and is gifted with the faculty of presenting these old poetic stories in prose which will appeal irresistibly to youthful minds. This continuous prose narrative may be unreservedly commended as likely to achieve its educational aim. Not only do the stories of Robin Hood and his merry outlaws in these pages read just as freshly as ever, but the process of changing their often difficult rhymed forms and antiquated spelling, of disinterring them from out-of-the-way places, and of clearing up some of the obscurities which they present to our more modern ways of thinking, all of which have gone to the making of this volume, is a valuable educational service. In a short, lucid introduction, Mr. M'Spadden discusses the vexed question of the actual or mythical existence of this old English hero, and also presents a view of the literature hitherto devoted to the subject by scholars. This book ought to be widely used. Junior and middle forms will read in it.

Stories from the Morte d'Arthur and Mabinogion. By Beatrice Clay. xxiv. + 209 pp. (Dent.) 1s. net.—These stories

are well done, and Miss Clay must be complimented upon producing a useful book for young children in which she has managed to retell many old and some morally doubtful stories in a discreet way. This is pre-eminently the case in her handling of the questionable character of Morgan le Fay; and in every page of this little volume it is possible to see how cleverly she has managed to get clear of the mediæval moral atmosphere while still retaining the essentials of these old-world romances in a form quite acceptable to the more puritan temper of our own times. She has supplied a brightly-written introduction, which deals carefully with the history of King Arthur, and yet is quite within the grasp of young minds. The simplicity and ease of the style throughout are indeed worthy of praise. She escapes from that affected style which so many writers of books for young children drop into. As a reading book for class work we cordially recommend this volume.

Punctuation: its Principles and Practice. By T. F. Husband and M. F. A. Husband. 140 pp. (Routledge.) 2s. 6d. Punctuation is so largely a matter of individual taste that no very definite rules can be laid down as to what is correct pointing, and what is not. But though punctuation may be considered as part of an author's style, "uncontrolled and dangerous liberty" is to be deprecated; because it may lead to the disregard of all principles of grammatical construction. In cheap journalism, for instance, some writers substitute a full stop for a colon or semicolon; but the result is often a sentence without a verb, and a jolting effect which jars the nerves of cultured readers. This style of composition represents a reaction against rules of punctuation based upon strictly grammatical considerations; and a useful purpose will be served by the little volume under notice if our literary works are preserved alike from the application of a minute constructional theory and from the neglect of all rational principles. The book is not an arid collection of rules and examples, but an interesting and instructive work in which the historical as well as the practical aspects of punctuation are described. Students of literature will find this unpretentious volume a worthy contribution to the study of the development of our written language as an instrument of expression.

Chopin. By E. J. Oldmeadow. 65 pp. (Bell.) 1s.—In this "miniature" biography Mr. Oldmeadow has given to amateurs and students of music what is in most respects an admirable account of Chopin. If we appear to make reserves it is only because in a few cases his language falls below the dignity of his subject. On the very first page he administers a shock to the lover of literary English (which is the usually fatal flaw in nine-tenths of the books written on musical subjects) in a sentence like the following: "there is hardly a beauty or a truth in his composition upon which some industrious body *does not pop up* from time to time with a new light." The italics are our own; but we believe Mr. Oldmeadow will be sorry he wrote that sentence. He discusses his subject under the heads of Chopin as boy, youth and exile, then devotes a discreet chapter to George Sand and the Paris-Nohant-Majorca episodes associated with that woman's name. A considerable amount of careful research into facts has gone to the making of these pages.

Specimen Letters. By A. S. Cook and A. R. Benham. v. + 156 pp. (Ginn.) 2s. 6d.—There is nothing in this volume except a brief preface, a table of contents, a selection of letters, and an index, yet we have no hesitation in commending it to earnest attention. The art of letter writing is like the art of conversation—on the point of extinction; and, perhaps, like many other arts, it is one which cannot in its vital essence be taught. Yet a study of these pages will do much to set some of the best models in the world before any willing student. It will

depend largely upon his or her own nature how far they influence it. The intimate quality of the correspondence here selected is its greatest charm; its spontaneity is also a characteristic of the utmost value; and the range of topics could hardly have been broader without touching upon those trivialities which tend to make the theme of much letter writing, especially among girls, and so tend to the ruin of epistolary art. To make these pages more complete, some letters from the ancient world are included; also some written by Madame de Sévigné and by Voltaire, whose correspondence alone, as the compilers justly say, "would have entitled him to no mean rank among the authors of his century."

(1) *Longfellow's Shorter Poems*. By H. B. Cotterill. x. + 97 pp. 1s. (2) *Essays from Addison*. By J. H. Fowler. xviii. + 113 pp. 1s. (3) *The Tale of Troy*. By Aubrey Stewart. Edited by T. S. Peppin. xix. + 213 pp. (Macmillan.) 1s. 6d.—These books are a continuation of the series of English literature for secondary schools which we noticed favourably some time ago on the occasion of its inauguration. They maintain all the features which were promised as distinguishing this educational venture, and although Longfellow and Addison are known to every schoolmaster in half a score of editions each, new ground has been broken in this case by the inclusion of Aubrey Stewart's "Tale of Troy." In this case we specially commend Mr. Peppin's introductory pages. They are excellent, and so are the illustrations; while the helps to further study in the case of these Homeric legends are set forth with clearness and discretion, and among them we are pleased to see reference to that noble translation of Homer which is by no means so widely current as it ought to be, in recognition of the scholarly genius of Messrs. Butcher, Myers, Leaf, and Lung, who accomplished it. So far this series has merited nothing but hearty commendations.

Schumann. By Ernest J. Oldmeadow. 58 pp. (Bell.) 1s. net.—We can compliment the writer of these brief pages unreservedly upon the accomplishment of a task which he evidently has loved. Mr. Oldmeadow tells the story of Schumann with discretion and sympathy, and has divided his material with admirable care. He first approaches this composer as the son of a publisher, therefore naturally bookish, and so accounts for the intellectuality always present in Schumann's music; then as journalist, in a singularly interesting chapter; then he tells the story of Schumann's romance with Clara Wieck, and the history of his artistic life. It is true he appears to think that intellectuality in music was carried by Schumann as far as it can go, for he writes from a definitely, but not bitterly, anti-Brahms point of view. But Mr. Oldmeadow is entitled to his own opinion of Brahms, though it happens not to be that of the present writer; who, having expressed thus his only difference from him, desires to commend this book to everybody who cares either for Schumann or his music.

Robertson's "Society" and "Caste." By T. Edgar Pemberton. xxxv. + 251 pp. (Heath.) 2s. 6d. net.—To bring two plays like these comedies of Robertson's out of the semi-obscurity of French's acting edition, and to dignify them by a place in a scholarly and elegant edition of great classics like the Belles Lettres series, may strike some hypercritical people as being rather an extravagant proceeding. We do not agree with such an estimate, and this volume repays perusal no less than it confers an honour upon Robertson, of whom Mr. Pemberton supplies a most interesting account by way of introduction. A feature of immense interest is found in an appendix, where the story upon which "Caste" was founded is given in full. The notes necessarily are not numerous; but many footnotes containing original readings of certain passages, and a carefully compiled bibliography of Robertson's dramatic works and

texts, and biographical and critical studies of the dramatist, add greatly to the value of this edition. Naturally, perhaps, Robertson's other literary work is passed over in this compilation.

Practical English Grammar with Exercises in Composition. By Mary F. Hyde. ix. + 324 pp. (Heath.) 2s. 6d. net.—There are many manuals of English grammar in existence, some of them of venerable name, but this addition to the number may be commended to attention. The aim of the book is expressed by the authoress so tritely that it is only after a careful examination that we speak favourably of her work. She says (what every writer of this kind of book says) that she wants "to give the pupil a mastery of the fundamental facts of English grammar, and to lead him to use that knowledge in the interpretation of literature and in the expression of his own thought." A book so obviously oblivious of the need for teaching girls something of the same nature is on the face of it a striking production; but it must be conceded that Miss Hyde has produced a useful book containing abundant and varied exercises for the application of the principles which she has laid down; and the selection and arrangement of topics is adapted to give a pupil a clear and comprehensive view of the subject. There are no greatly original features in the book, but it is distinctly useful, and is the conscientious outcome of the work of a practical and capable teacher.

Edward Fitzgerald. By A. C. Benson. vi. + 207 pp. (Macmillan.) 2s.—There are many men of letters who have left much more to show for their life work than Edward Fitzgerald, but few names more deservedly find a place in this well-known series than his, and Mr. Benson is to be complimented upon the writing of an admirable biography upon an admirable subject. A prefatory note tells of the extensive preparation he made for the writing of these pages; perhaps it is this which has made the book so lucid, so entertaining, yet withal so sympathetic. One's regard for Fitzgerald is heightened immensely as these pages are coned, and it is extremely difficult to lay the volume down; notwithstanding Mr. Benson has a clear eye for the temperamental defects of his subject, and a keen consciousness of his limitations. Fitzgerald's was the career (if, indeed, that be not too ambitious a term, and one he himself would have disclaimed) of a lonely, secluded, fastidious, and affectionate man; and, as the author remarks, "it was a life not rich in results, not fruitful in example." A comparative few, indeed, know anything of what Fitzgerald left behind him except his immortal paraphrase of Omar Khayyam; still fewer have read those wonderful letters of his into which the essential critical genius of the man poured itself in a quiet, unambitious way. "A man fond of books, fond of the country and the sea, and with a great devotion to the theatre, of sufficient means, unhappily mated, and living all his life with a wistful outlook upon the past." Such is the man whose life story makes the charm of this biography. And we believe few readers of these delightful pages will leave them without a very tender regard for the man who had "Fitzgerald's marvellous power of taking people as he found them, and loving them for what they were, with no desire to mould them to his own will." The final impression left by a perusal of this book is that, if a few more Fitzgeralds with no fewer imperfections and defects of their qualities were at present writing such letters as his, criticism would be richer and more fruitful, and literary life as a whole more leavened with urbanity.

Blackie's Model Readers, Books I. and II. 8d. and 10d.—In these Readers the full-page illustrations are brilliantly coloured. No such books could have been produced a dozen years ago. We wish these "Model Readers" all success.

Geography.

Stanford's New Orographical Map of Africa. Mounted on rollers and varnished. (Edward Stanford.) £1.—This, like the "Orographical Europe," has been compiled under the direction of Mr. Mackinder; it may, therefore, be relied upon as a correct up-to-date delineation of what may be no longer termed "The Dark Continent." As the title implies, it is a physical map, but much political and other information is added, without detriment to its orographical appearance, by the employment of grey, almost transparent, lettering. The practical teacher will at once note the chief of many excellent features, viz., the "obviousness" of the enormous area over 1,000 feet, an important point in a continent two-thirds of which lies within the Tropics; at the same time he will probably observe the only defect, viz., the comparative indistinctness of the great rivers. They are excellently marked for reference and library purposes, but not sufficiently aggressive for the class room. The elevations of land level are shown by six continuously deepening tints of brown, ranging from sea-level to over 15,000 feet. This the publishers claim as an improvement on the ordinary greens and browns of most latter-day physical maps, asserting that such contrast of colours is apt to produce confusion in the mind of the cursory student. It is, perhaps, a matter of opinion whether this is actually the case, but, be this as it may, there is no gainsaying the fact that this map, at all events, looks well, and subject to our "river" objection, should teach well. It may also be purchased in four separate sheets, price 16s. the set.

The Oxford Atlas of the British Colonies: Part I., "British Africa." (Wm. Stanford & Co., Oxford.) 2s. 6d.—This Part I. of what should be a valuable series measures 13½ by 11 inches and contains 17 maps, six of which deal with African geography as a whole, and seven with sections of the continent, while the remaining four are outline maps for testing purposes. We like the first six best; the next seven are almost too "political," the land features in some of them seeming to play a part altogether too subsidiary. The outline maps are copies of the well-known autograph hand-map series published by the same firm, and obtainable as separate maps in any quantities. Of these we have already expressed the opinion that they are too over-laden with detail for all but high-class students. Indeed, for ordinary schoolboys some of them are simply confusing. But the first six are almost beyond reproach. They are beautifully clear, void of all but the necessary names, up-to-date and pleasing to the eye. They comprise maps of the physical and political features, vegetation, temperature, rainfall, nationalities, &c. We call special attention to the excellent physical map of the whole continent. Coloured in different shades of brown with a white coast-rim for land under 1,000 ft., it has a very striking effect; whether this effect may create confusion or not is a matter of opinion, as we have already observed, but we must admit a prejudice in its favour for teaching classes. The political map of the world showing British Possessions (Map. II.) is drawn, we are glad to see, on Mollweide's projection, whereby the relative size of the various countries appears at a glance. We think that this completely counterbalances the consequent distortion of shape of some of the Imperial sections, and only wish that cartographers, especially school cartographers, would more often employ this useful, though little used, device. The other general political map, that of Africa alone, shows one thing very conspicuously, viz., the dearth of railways. In the face of such a dearth we are surprised that the Natal system is omitted; the beginnings in W. Africa might also, with advantage, have been suggested. And while we are on minor points of criticism we note that occasionally the register of colours

is not satisfactory (in some of the rainfall maps, for instance), and that none of the maps are numbered, a little detail which may easily cause loss of time in a class whose master believes in constant and close use of an atlas. But these are small points. We like the atlas, and can confidently recommend it to all teachers who are taking up Africa as a special subject.

History.

Russian History. By A. S. Rappoport. 155 pp. (Dent.) 1s. net.—This booklet (in the Temple Primers series) contains probably all that the average Englishman will want to know about its subject. The story is clearly told, and there are, in three appendices, a chronological table, several genealogical tables and a list of authorities. But we think that the history of Russian advance westwards in the seventeenth and eighteenth centuries might have been unified more, instead of being told chronicle-wise.

English Local Government. By P. Ashley. 190 pp. (Jack.) 1s.—A capital little book, giving a clear and business-like account of our institutions for local government and the matters they have to control. There is also interspersed a good amount of sound criticism of some features. It should be useful to all citizens. There is an index.

Science and Technology.

Practical Nature-Study for Schools. Part II.: Answers to Questions. (For Teachers Only.) By Oswald H. Latter. 150 pp. (Dent.) 6s. net.—The first part of this work, noticed in the August issue of THE SCHOOL WORLD, consists of questions for pupils, to be answered by first-hand observations and experiment. The present volume is of the nature of a key, and will enable teachers untrained in natural science to supervise intelligently the practical exercises of the pupils. The book contains 81 useful illustrations, simple enough for reproduction upon the blackboard during the revision of the work of the class. Mr. Latter rightly remarks that the whole value of this kind of work lies in compelling personal observation and research, and we commend his two books to the serious study of teachers in general, as evidence of what a purely heuristic method, at its best, may be capable of.

New Reagent Bench Bottles. (Scientific Apparatus and Equipment Agency, 46, Osnaburgh Street, Regent's Park, N.W.)—The three specimen reagent bottles submitted to us are of about 200 cc. capacity, made from clear white glass, and furnished with flat round stoppers. The special feature is the lettering, which in each sample consists of enamel free from lead, and is warranted to withstand acids, alkalis, and sulphuretted hydrogen. One of the samples sent has been in use for four years, and, as it is labelled Sulphuric Acid Conc., should testify to the quality of the enamel, which does not show any signs of wear. The lettering in this case consists of stencilling, clear letters on an enamel ground. The letters will, therefore, appear of the same colour as that of the liquid in the bottle. Another specimen has black lettering on a white enamel ground, a style which is eminently clear, and very neat. The third specimen has the letters in white enamel enclosed in an oblong outline also in enamel, producing a very elegant appearance. When one remembers the rough bench bottles of a generation ago with which most laboratories were furnished, the appearance of the modern equipment, in which each bench has glass shelves and such reagent bottles as those under consideration, is very striking. These enamelled bottles can be obtained lettered and numbered.

both on the stopper and on the body of the bottle, in accordance with a system in which each has its bench letter and shelf number. It is unnecessary to point out the advantage of being able to do without paper labels, varnished or otherwise; and, considering this freedom, the price, under 12s. per dozen, does not seem high. The stoppers in the samples sent are accurately ground, and we can only imagine the next piece of refinement will consist in cutting the flat tops to a hexagonal pattern, as is already done in some more expensive patterns.

A Systematic Course of Practical Organic Chemistry. By Lionel Guy Radcliffe and Frank Sturdy Sinnatt. xi. + 264. pp. (Longmans) 4s. 6d.—The authors have made a praiseworthy attempt to put a really practical work into the hands of the student; it is written in an eminently suggestive style throughout and it should certainly induce the intelligent student to think as well as to use his theoretical text-books alongside his laboratory work. After introductory exercises dealing with manipulation, the preparation and properties of hydrocarbons, alcohols, ethers, aldehydes, organic acids, nitriles, esters, &c., are dealt with. Wherever possible the work is carried out quantitatively and the directions given are sufficiently concise, so that the student may, in many cases, be able to find out minor points for himself. Subsequently the benzene derivatives are investigated. In a special part fifty pages are devoted to the qualitative organic analysis required for the Board of Education examination, followed by some more advanced preparations and a valuable section dealing mainly with the qualitative tests for alkaloids. The advanced preparation section would be improved if exercises were inserted dealing with the manipulation of very small bulks and also of large bulks of substance: the average trained worker often breaks down badly when asked to deal with these. An exercise dealing with the organomagnesium compounds might also well have been inserted here. We miss throughout any reference to the original literature. This is distinctly a mistake; the student cannot be too early trained to acquire the habit of reading. Provided always that the demonstrator insists on the manipulative work being well done and on the repetition of preparations in which bad yields are obtained, students following the book should become good manipulators. The book is well got up and the price renders it accessible to every student: an important consideration in these days when one is forced to buy so many text-books.

The Outlook to Nature. By L. H. Bailey. x. + 296 pp. (The Macmillan Co.) 5s. net.—There are here reprinted four lectures delivered in January last by Prof. Bailey, in the Colonial Theatre, Boston. The titles of the lectures are "The Realm of the Commonplace," "Country and City," "The School of the Future," and "Evolution: The Quest of Truth." The author is well known in this country as a writer of excellent text-books of botany and as the leading spirit in the Cornell University Nature-study movement. These lectures show him to be much more—a poet and an original thinker on the larger questions of life and conduct. Alike in pleading for a sympathetic attitude towards Nature as a means of "greater efficiency, hopefulness and repose"; in comparing and contrasting farm-life and city-life as factors in the building of a higher civilisation; in forecasting the ultimate effect upon educational methods of the new pedagogical ideas, and in preaching the gospel of evolution, Prof. Bailey is delightfully eloquent and convincing. It is perhaps the third essay which will appeal most directly to the readers of THE SCHOOL WORLD in general, for it formulates with unusual clearness the aim which so many educationists are striving to realise. Prof. Bailey tells us that we need to change our point of view, and

rid ourselves of "the idea that schooling is an affair of the inside of a building"; for the highest product of civilisation is "sensitiveness to life." "No boy or girl should leave school without the power to attack a question in actual affairs, or to do a piece of work with the hands." What is wanted, is not the addition of new subjects to present courses of study, but "a new kind of school." The laboratory is not sufficient; "it is only a collection of materials." "Object-lessons are largely make-believe," and Nature-study—which, so far as it places the pupil with the objects and phenomena as they occur in Nature, is "fundamental and abiding"—is persistently treated "as if it were object-teaching or mere laboratory teaching." "We must have actual shops, actual enterprises, actual fields, actual gardens—not the materials brought to the pupil, but the pupil taken to the materials." For lack of a better term, Prof. Bailey would call this, "industrial education, with the reservation that it mean much more than commercial education, or than manual and technical skill for use in the arts and trades—that it mean true education in aiding mental development, supplying usable information, affording manual and physical training, developing sympathy with the work of the world, arousing enthusiasm for service." In the meantime, the school-garden—"not maintained primarily to teach the children gardening, but to be utilised for its educational uses"—serves excellently as an out-door area where the children may work with actual problems. Again, studies in language, history, literature and philosophy should not be the beginning of the educational process; "they are the flower, not the seed," and in the school of the future, the child will not be asked "to express himself before he has anything to express." These extracts serve to indicate Prof. Bailey's general attitude towards pressing educational problems, and the remaining essays are no less stimulating and suggestive. But the breezy originality of treatment and the literary charm of the whole are qualities which can only be enjoyed to the full in the leisurely perusal which the book so thoroughly merits.

Outlines of Inorganic Chemistry. By Frank Austin Gooch and Claude Frederic Walker. xxiv. + 233 + 514 pp. (Macmillan.) 7s. 6d. net.—This work aims at introducing the student to chemistry by consideration of the simplest and fewest things; it is divided into two parts headed respectively Inductive and Descriptive. In the former, the experimental development of the principles upon which systematic chemistry rests is dealt with, the introduction of the notion of the atom being reserved for the final chapter. This early part is very readable from the point of view of the beginner who is attending a systematic course of lectures along with a laboratory course. The descriptive portion deals with each of the elements in turn, going sufficiently into detail in parts to make it useful to the student reading for an Honours course. It is well illustrated and copious use is made of graphic symbols both in equations and for denoting configuration. A very valuable feature is the short paragraphs in italics giving a summary of the properties of each element. Although the ionic terminology is employed, the authors have fortunately not gone to the extremes so often met with at the present time. The inductive portion contains a novel feature in the form of a clearly written chapter on action and equilibrium—a subject which is now receiving so much attention. We are glad to note that in this the phase rule is defined as "most serviceable in correlating phenomena of equilibrium between substances associated in a reversible process." The student is too often led to believe that the conditions of equilibrium are governed by the phase rule. Lastly, it may be mentioned that the price is such as to bring the book within the reach of every student. The volume is printed in a clear type and bound so as to open flat.

The Landseer Conversational Object Reader for Infants. 96 pp. 8d. *The Landseer Object Readers:* No. 1, 128 pp., 9d.; No. 2, 160 pp., 1s.; No. 3, 192 pp., 1s. 3d.; *Teachers' Book*, No. 3, 384 pp., 3s. 6d. (Philip.)—These readers are intended for use in conjunction with coloured wall-pictures, of which they contain reduced facsimiles. The illustrations seem to us to form much the best feature of the series. The text, while in general very well fitted for its purpose, shows occasional inaccuracies, and we imagine that a really efficient teacher will be irritated rather than helped by many of the pages of "teaching notes" provided for him.

How to Live. By Richard Caton. 42 pp. (Williams and Norgate.) 3d.—This little book is designed for the use of the older pupils in primary schools. It deals only with the simplest and broadest rules of life and health, but if every child could be made to understand these before leaving school, an incalculable saving of suffering and disease would soon result. The pamphlet deserves wide circulation.

Meteorology: or Weather Explained. By J. G. M'Pherson. 120 pp. (Jack.) 1s.—A pleasantly written little volume which, though it does not contribute anything very new on the subject, may be recommended to the general reader who wishes to know something of the methods by which weather forecasts are made.

How to Keep Well. By Albert F. Blaisdell. Revised Edition. vi. + 265 pp. (Ginn.)—An attractively written and excellently illustrated text-book of elementary physiology, in its bearing on the laws of healthy living. The present edition considerably improves upon previous ones, and may be recommended.

Mathematics.

A Course in Fractical Mathematics. By F. M. Saxelby ix. + 438 pp. (Longmans.) 6s. 6d.—This course is not meant for beginners, as it assumes a certain familiarity with algebra and geometry. Roughly speaking, we may say that the course includes trigonometry, with logarithmic calculations, plotting of functions and determination of empirical formulæ, differentiation and integration, and vector algebra; but this brief statement does not do justice to the great variety of the contents. The strength of the book seems to us to lie in the wide range of the illustrations and examples; the examples involving logarithmic calculations and the determination of empirical formulæ are exceedingly varied, and appeal to a great many different classes of students. In leading up to differentiation great stress is laid—we think rightly—on the conception of a rate of increase, though we think the exposition would be better if it were, in the early stages, carried on without the use of the symbol for a differential co-efficient. In a very interesting preface the author discusses briefly the merits of the logical, the educational, and the historical order of treating his subject. Doubtless there will always require to be a compromise, though no order can be good unless it is educational. The difficulty seems to us to be not so much whether the order is to be logical as how much is to be explicitly or tacitly assumed. For beginners there must necessarily be many assumptions, but we think that an effort should always be made to be demonstrative in this sense, that the student should be able to show that new theorems or results are consistent with the old. The demonstrations need not be on the lines of Euclid, but they should at least be based on some general reasoning. In many respects the appeal to intuition, though not without its dangers,

is sufficient, and this book is specially strong in that respect, though possibly carrying it too far. Any student who carefully works through this course will have acquired a very varied stock of information, as well as a good introduction to higher mathematics.

Mathematical Recreations and Essays. By W. W. Rouse Ball. Fourth edition. xvi. + 388 pp. (Macmillan.) 7s. net.—In this edition there have been added to the second part chapters on the "History of the Mathematical Tripos at Cambridge," "Mersenne's Numbers," and "Cryptography and Ciphers," while the earlier chapters contain several additional "Recreations" involving elementary mathematics. When a book has reached its fourth edition it has evidently met a "felt want." There are indeed few books to which the epithet "mathematical" can in any sense be applied that appeal to so wide a circle of readers, and anyone who has not dipped into the pages of the "Recreations" has a great treat in store. The geometrical paradoxes should be of special interest at present.

Examples in Arithmetic. By C. O. Tuckey. xii. + 251 + xxxix. pp. (Bell.) 3s.—It is stated in the preface that an attempt has been made to shorten the subject by grouping the examples according to method, each method being at once illustrated by concrete examples in which it is used. Though the principle is not by any means new, it has in recent years not received the attention it merits. The application of it in the book before us has made the collection both interesting and representative. We would gladly see Section IX., "Applications of Proportion to Geometry and Physics," expanded at the cost of Section X., "Compound Interest and Stocks." A very useful addition to the usual stock of the text-book is Part II. entitled, "Arithmetic with Tables." This innovation seems to us to be justified on many grounds. Scattered throughout the book are short notes on method; these do not amount to very much, and should, in our judgment, either be omitted altogether or made more thorough. The book contains several tables (logarithms, trigonometric ratios, and a short compound interest table).

Westminster Arithmetic. Scheme B. By E. C. Loder. (National Society's Depository.)—Sets of examples, with occasional hints on method, adapted to the requirements of the Code, Standards I. to VII. Each standard has assigned to it a booklet of thirty-two pages in stiff paper covers, the price being 2d. (net) each for Standards I. to IV., 3d. (net) each for Standards V. to VII. Answers to Standards I. to IV. and Standards V. to VII. are also before us, two books, each costing 4d. (net). The covers usually contain the tables required in the book; the paper is good and the type plain. These compilations are, we should say, quite up to the average of books of their class, but we fear that the arithmetic lesson under the Code will be rather dull unless enlivened by an enthusiastic teacher.

Patent Compasses. By D. A. Low. (Longmans.)—These compasses differ from the ordinary compass in having the pencil and centre stem parallel so that the pencil and stem can always be kept perpendicular to the paper; there are no screws, and an ordinary standard size drawing pencil can be fitted to the compass. At present the compasses are made in two sizes: the two-link size and the three-link size, drawing circles up to 5½ and 8½ inches diameter respectively. The prices are 6d. net and 9d. net. The design is certainly simple, and teachers of drawing should examine the instruments.

Examples in Algebra. By Charles M. Clay. vii. + 372 pp. (Macmillan.) 4s. net.—These examples are said to number 8,000, and they cover the whole range of elementary algebra up to and including the progressions and the binomial theorem. The only test of such collections that is of real value is that of actual use; but, so far as can be judged from examination of the book, the various sets are well graded, representative, and not too difficult. The book is not provided either with a table of contents or with an index, so that reference to particular sets of examples is not so easy as it should be; and no answers are given.

A First Algebra. By W. M. Baker and A. A. Bourne. x. + 176 + xxxv. pp. (Bell.) 2s.—This book is adapted from the first part of the "Elementary Algebra" by the same authors, and is a very simple and well-arranged text-book for beginners. The subject is carried as far as quadratic equations and fractional and negative indices.

Miscellaneous.

Architecture and its Place in a Liberal Education. A paper read before the University Extension Guild. By Banister F. Fletcher. 32 pp. (Batsford.) 1s. net.—We lately reviewed Mr. Fletcher's "History of Architecture," a remarkable book of wide scope. This paper urges on all connected with education the desirability of including architecture in their schemes of instruction. Mr. Fletcher is an enthusiast, and he is not a schoolmaster, so we are prepared to find that he estimates the actual value of his study very high, and at the same time underestimates the difficulty of adding new subjects to a curriculum. In brief, this cannot be done: there is too much in the school curriculum already. But so far we cordially agree with Mr. Fletcher, that the principles of architecture ought to be explained in dealing with each race which has an architecture. This is done now in the case of classical study, although not quite thoroughly enough; but English history books and other such ought to include sections dealing specially with architecture, not as for an expert, but to enable any reader to distinguish Norman from Gothic, and to know what ideal each age has set before it in building. And what a terrible lesson it is for us to turn from twelfth century castles and thirteenth century cathedrals to a London respectable suburb! So feels he who comes back from an hour with Homer to the daily paper, with its detestable style and base ideals.

The Boy and his School: what it can and what it cannot give him. By Robert L. Leighton. 97 pp. (Murray.) 2s. 6d. net.—The headmaster of Bristol Grammar School is a man of large experience, and what he has published in this little volume is emphatically worth reading and considering. Not that the present writer agrees with all his conclusions—far from it. But every reasonable discussion of educational problems is to be welcomed as bringing nearer the day when a science of education will have been formulated. As Mr. Leighton says, "ordinary attempts to investigate educational questions are so unscientific, so unsound in their method, that they can only lead to false conclusions;" but a well-reasoned presentation of an experienced schoolmaster's views surely must hasten in some measure the coming of the science which is to show how to rectify our educational blunders. Mr. Leighton's insistence upon the importance of what he calls the "unofficial agencies of education" is opportune and may be commended to the attention of parents. It is absurd to expect the schoolmaster, with his command over thirty per cent. only of a boy's waking hours, to counteract the negligence and indifference shown by parents

in their oversight of the seventy per cent. It is perhaps too much to hope that parents may be got to read this book.

School Prayers for Week-day Mornings. xvi. + 144 pp. (Rivingtons.) 2s.—This book is an elaborate and a successful attempt to provide systematic devotions for schools on a sufficiently wide basis and on so liberal a scale as to run no great risk of monotony and the carelessness which springs from a too frequently repeated customary form of words. It contains two alternative forms of service, one of which is a suggested abbreviation of Matins with cycles of psalms selected from the psalms of the day; the other a freer form of service printed in full for each day of the week, with special forms of the same type for the first and last day of term and for a Saint's day. The distinctive features of this second form are a new rota of lessons so arranged as to extend over two years of school life (a matter which has been managed with much skill and discretion); a small selection of psalms "and other psalm-like passages" (a capital addition) from the Old Testament; and a collection of prayers and thanksgivings with four short litanies. The Archbishop of Canterbury commends this book. Wholly removed from his Grace's point of view, so does the present writer.

Seat Work and Industrial Occupations is the curiously American title of a little book by Mary L. Gilman and Elizabeth B. Williams, published by the Macmillan Company at 2s. 6d. net.—The greater part of the volume is devoted to paper folding, ruling, measuring and elementary drawing as applied to the making of various fascinating but simple toys and other objects. The directions for their manufacture are clear and concise. It is rather a pity that the section on "things to make for special days" has not been re-written for the English edition. Kindergarten children on this side of the Atlantic are much more likely to be interested in, say, Guy Fawkes than in Lincoln's birthday or Thanksgiving day.

Drawing from Models and Objects. By John Carroll. (Burns and Oates.) 2s 6d.—In this volume Mr. Carroll gives us yet another practical little treatise on elementary drawing. The novel feature of the book is the arrangement of the exercises in such a way that the drawing of round forms is attempted first—a very great advantage in class teaching, at least. The lessons are primarily intended to meet the needs of young teachers and students in training colleges—and they seem admirably adapted to fulfil their purpose.

Philip's Secondary School Form Register for Sixty Names. (Philip.) 1s. 6d.—In this register the whole term's attendance is kept in one line, the weeks are divided by bolder lines, and each group of five names is ruled off in red. A new feature is the clipping down of the flap page and the ruling of a column for the total number of attendances recorded on it. This saves that continual turning over which makes a register a disagreeable piece of book-keeping to a form teacher. The book is clearly printed, ample space is provided for the daily entries, and the numbering and ruling call for special praise.

Blackie's Commercial Course of Writing and Book-keeping. Six books. (Blackie.) 2d. each.—This is a series of writing copy-books specially prepared for commercial classes in continuation and other schools. The style of writing is round and condensed, *i.e.*, severely official in character, and the complete book provides an excellent course of practical instruction in book-keeping and in the use and meaning of commercial forms and terminology. The copies are beautifully printed, and the writing paper is the same as that of which real business ledgers are composed.

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.

Classical Archæology in Schools.

I AM sorry that your reviewer of "Classical Archæology in Schools" was not able to find any reference therein to the English Photographic Company of Athens. The reference which he seeks is on p. 22, and it gives the further information that a full set of this company's photographs is to be seen in the library of the Hellenic Society (22, Albemarle Street, W.). I shall be obliged if you will kindly publish this correction.

JOHN L. MYRES.

1, Norham Gardens,
Oxford.

A Syllabus of Instruction in Welsh.

It appears that many teachers have been misled by a statement recently made in certain newspapers that a syllabus of instruction in Welsh has been prepared for the Welsh Language Society by his Majesty's Inspectors of Schools.

This would imply that a certain syllabus had already received the sanction of the Board of Education, which is not the case.

In order to avoid all misconception, allow me to state that, owing to the claims of Welsh being now understood and recognised better both as a medium and a subject of instruction, the Council of the Society has been considering the need of supplementing its general scheme of 1901 by a more detailed syllabus. Two committees—one for North Wales and the other for South Wales—have been elected to consider the schemes and syllabuses which are already in use in different localities. One of these committees has not yet been convened, and therefore no scheme can have been adopted. But the conveners are collecting materials in order to aid the committees in framing an acceptable scheme for the Welsh, English, and bilingual districts of Wales. One of H.M. Inspectors kindly gave some suggestions for such a scheme as a basis for discussion. This was, however, quite unofficial, and any schemes adopted by local education authorities will, of course, have to be submitted to H.M. Inspectors for the several Welsh districts for approval on behalf of the Board.

I shall be glad to receive from experienced teachers, and from anybody else interested in the cause, any suggestions which may be useful to the committees for framing their scheme.

D. JAMES,

Secretary of the Welsh Language Society.

Treherbert.

The Scientific Observation of Children.

It is now generally agreed that a knowledge of the child and of the best environment for the child is the first essential for a trainer of youth.

Those who rear and train other and less complex animals usually consider it necessary to spend much of their time with the objects of their care, so that they may become acquainted with their habits and peculiarities, and prove by experiment the best methods for dealing with them. This is done by the biologist in his study of living animals from their birth upwards. Modern psychologists also base their work on an observation of

brain and nerve action in the living, and especially in the *young* living, state. But in our training colleges, as a rule, the students see little of children, and those they meet with in the "practising schools" are generally over seven years of age and hence not so valuable as subjects of observation.

Now might not the study of the living child from babyhood upwards take the place of some of the lectures and text-books? Might not crèches and nursery schools be attached to training colleges, so as to afford the requisite opportunity for such observation and study?

These schools could be under the management of trained nurses, and be subject to the inspection of medical men and women. Students could spend, in rotation, a whole day in such a school and take complete charge of certain children. By these means they would learn the needs of growing infants, and might make and record observations, and draw conclusions bearing on education. In the same manner as Prof. Baldwin and other psychologists, they might exercise originality and ingenuity in inventing methods of investigation. They would learn to understand the face of a child, to recognise childish suffering and fatigue; and also how to treat small ailments and accidents under the guidance of trained nurse and doctor. Besides this they would necessarily learn much concerning ventilation, heating and sanitary matters generally. All this would be *practical* work. Such a scheme might meet many difficulties and lessen expense, for a training college with nursery-school attached would serve as a training-ground for teachers, children, nurses and school-inspectors.

In addition to and supplementing the nursery-school there might be a laboratory and kitchen, &c., where the students could work at:—

Elementary biology (the nature of protoplasm, nerve tissue, &c.).

Elementary chemistry (foodstuffs and their proper preparation, &c.).

Elementary physics (eye, ear, drainage, &c.).

Elementary human physiology and hygiene.

Teachers who passed two years in such an environment would, I believe, have a better and more scientific understanding of the child and of education generally. To them the school would represent a laboratory, and each child an experiment, the results of which are fraught with vital importance for the nation and the race.

W. HOSKYNs-ABRAHALL.

The School World.

A Monthly Magazine of Educational Work and Progress.

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SIXPENCE.

THE SALARIES OF TEACHERS IN AMERICA.

(FROM A CORRESPONDENT.)

IN December of last year a well-known English minister was interviewed by an equally well-known English journal on his return from a visit to the United States. He "found much pleasure," it was reported, "in examining the elementary school system. Nearly all the teachers employed are women, whose salaries vary between £70 and £500 a year, while pensions amounting to half of the income are provided on retirement. Our own elementary school teachers would welcome such a generous system." No doubt. It has only to be added that so generous a system would be equally welcomed by the elementary school teachers of America if they ever came within sight of it.

Within a short time of the publication of this roseate picture of American conditions the American press gave abundant evidence of a very different state of affairs. The city of Washington is a particularly edifying example, not merely because it is the political capital and one of the most charming places of residence in the country, but because it is the one American city controlled by the Federal Government. The administration of its schools, therefore, is an index of the zeal for education not in any particular locality but in the nation as a whole. In the *Washington Post* of January 10th, 1905, appeared a petition for higher salaries from the public-school teachers of Washington. It declared that, measured by the purchasing power of the dollar, their salaries were at least 20 per cent. less than eight years ago. "The young teacher just graduated from the Normal School lives on an annual salary of 500 dollars, which resolves itself into 41.66 dollars per month. How does the amount left, after deducting 25 dollars for board, compare with the wages of a capable maid-servant in Washington, who receives not less than 20 dollars with board included?" A proposal to increase these salaries was defeated in Congress. In the course of the debate it was stated that the average salary of teachers in the District of Columbia was £147

a year, while the average salary paid to employees of the street-sweeping department was £170.

Let us now turn to New England. New Haven is the seat of Yale University, and may therefore be presumed to have some appreciation of the value of education. The Superintendent of Schools in his annual report presented in February, 1905, showed that while the average salaries of graduates of the commercial department of the High School were £64, £74, £84, and £94 for their first, second, third and fourth years of business employment respectively, the salaries of the teachers in the New Haven schools for the same periods were £60, £70, £80 and £90. The commercial students had passed through a three-years' high school course merely, but the teachers had followed a four-years' high school course, with a course of at least two years at a training school. Boston as a rule stands well in this respect, as do also its most important suburbs, but the same cannot be said of the rural districts of New England, where candidates for the position of a teacher are often invited to bid against each other for the place. Such competition has cut the rate in many instances to £1 a week.

In the prosperous and enterprising State of Indiana there has lately been a vigorous agitation on this question. Last year the average pay of teachers in that State was £76. There are 1,974 receiving less than £100. Engine-drivers in that region receive an average of £215, or more than the average of eighty-four principals of city schools in the State. Blacksmiths receive £131, or twice the salary of half the teachers. The average pay of weighmen at the coal mines is more than three times the average of the lowest salaries of the teachers. In the city of Indianapolis itself the average salary of an elementary teacher is about £112; it has remained around this figure for several years in spite of the increased cost of living. At a meeting of the Indiana State Trustees' Association held in December, 1904, the State Superintendent of Schools lamented that the low rate of salaries was almost entirely responsible for the increasing scarcity of teachers. The teacher's calling, he said, was the catch-basin of the aimless driftwood of humanity. "It is simply the stepping-stone to other professions. It is safe to say that the vast majority of those

who teach on through years do so with a yearly anticipation that some change of fortune may come to their relief. Many are teaching because they had not the stamina to starve till a competence might come to them in the profession of their choice." The case is quoted of a young woman getting £120 from her school who resigned to accept a post with an insurance company at £180, and it is stated that men teachers are constantly being taken away for life insurance work and as representatives of publishing houses, their salaries in these positions invariably being at least double what was paid them as teachers.

In the neighbouring State of Ohio a dearth of teachers not long ago was explained by a school superintendent as due to the fact that the poorest workmen on the streets received as much on the average as the country teacher. Many teachers in the rural districts resigned and came to the city to take places as motor-men and conductors on the tramways for the sake of the higher pay.

Chicago is popularly known as "the windy city," and there has certainly been no oppressive calm of late years in its educational affairs. First, the Board of Education reduced the pay of the teachers on a pretext that would hardly have occurred to honourable men. Its contention was that, while they were engaged for the school year, their salaries were to be reckoned by the fiscal year; that is to say, teachers might be engaged in June, at a certain salary, for the school year beginning in September, and might then be liable to have these salaries reduced without warning on the New Year's-day following. One of the Chicago teachers, Miss Haley, was successful in baulking this fraudulent scheme by an appeal to the courts. But this was not all. The school authorities in Chicago, according to an account of the affair given by Mr. Ossian H. Lang in the *Forum*, "refused to honour the new salary schedule, granted to the teachers after an organised fight, on the ground that there was not money enough to meet the new demands. After a plucky campaign in bringing to terms some of the tax-dodging corporations of Chicago and putting the city in possession of over a million dollars, which would never have gone into its treasury, the teachers felt that there was no longer any excuse for withholding from them their just due. But they had to see the money they had collected for the city promptly diverted to other purposes. The city officials were evidently determined not to pay the just debts on teachers' salaries. Still greater disrespect was shown when the teachers were deprived of one day's pay for the legal suspension of work on Labour-day. Is it any wonder that the splendidly organised Chicago Teachers' Federation was driven to an alliance with the Chicago Federation of Labour?" Their action in entering the trade union ranks was severely criticised in the press, but was defended by the President of the Federation on the ground that this combination with a large body of voters would enable them to bring about legislation which would not only safeguard

their own interests but promote the welfare of the schools.

It is undoubtedly in the Southern States that the educational situation is most depressing, and the teachers have to take their share in the general neglect and poverty from which the schools of that section suffer. In December, 1904, the Alabama Educational Committee, a body organised in connection with the State Department of Education, issued through the press of the State a manifesto addressed "to the People of Alabama." It attributed the dearth of competent teachers to the short sessions, ranging from ninety-three days in the coloured to one hundred and six days in the white schools, and to the low average of salaries, ranging from less than £5 a month in the coloured, to under £7 a month in the white schools. "The average day labourer," says the manifesto, "is better paid, for he has employment throughout the year."

This remark, by the way, suggests an important caution in the interpretation of American statistics. When we learn that the salary of teachers in a certain place is so much a month, it does not necessarily follow that the annual salary may be computed by multiplying this figure by twelve. From the same authority we discover that in many communities in Alabama the teachers have to purchase out of their meagre salaries such equipment as maps, pictures, globes, and blackboards, if they are not to work in schoolrooms that are absolutely bare. According to Dr. Charles W. Dabney, President of the University of Tennessee, the average monthly salary of a teacher in North and South Carolina is £4 12s.; in Georgia and Alabama, £5 8s. The schools are open in North Carolina an average of 70·8 days, in South Carolina 88·4, in Georgia 112, and in Alabama 76·3.

It is fair to say that, according to the report of the United States Commissioner of Education, it is a common practice in some of the Southern States for the patrons of a school to contribute to increase the salary of the teacher received from public funds, or to engage him to conduct his school as a private school after the public term has expired. According to the testimony of Southerners themselves, however, such alleviations of the teacher's lot must be regarded as exceptional. Prof. W. E. Dodd, one of the leading Southern historians, has more than once attributed the low standard of history study to the inefficiency of the schools, and particularly to the discouraging status of the teachers. Writing in the *South Atlantic Quarterly* for April, 1904, he said that the students entering college came largely from country homes, where from three to five months a year was all the schooling they got. "And when the children are in the schools there is little chance for them to learn anything about history, for the teacher receives only 25 dollars a month for her work. She is not to be blamed if she uses her vocation as a stepping-stone to matrimony. If it is a male teacher, the salary may reach 30 or 40 dollars a month, but the situation is not improved, for the

real aim of the teacher is to accumulate a few dollars with which to start his next crop."

In another number of the same magazine Prof. Dodd says that in Virginia and North Carolina, at any rate, the teacher to whom a boy is sent on reaching school age "is a cheaper man usually than he who 'clerks' in the father's store, or who looks after the farm; if not a cheap man, she is, in many instances, a young woman hardly out of her teens and waiting for a proposal of marriage, accumulating meanwhile a scanty outfit for the prospective home." And individual instances which find their way into the newspapers only confirm this general impression. Thus, a farmer who has spent many years in the mountains of the Carolinas says, in a letter appearing in the *New York Tribune*: "I knew a school board to enter into a contract with a teacher when there was an understanding between the teacher and the chairman of the board that the teacher should teach one week and then go home and let the son of the chairman, who had no certificate, teach for him, the teacher to draw the pay and give it to the boy. In this particular case the chairman was a farmer, one of the other members of the board was one of his tenants, and the other was a man that worked for him occasionally. Both were under his control."

The visitors whose glowing reports of American schools appear in the English papers have commonly had no experience of rural schools, and their knowledge of urban schools is usually confined to the wealthier cities of New York State and New England. To come to a fair conclusion, it is necessary to set by the side of their account such facts as I have just collected. The official reports of the United States Commissioner of Education give the average monthly salaries of teachers in the public schools for most of the States individually, with the average for the United States as a whole. In the last report to which I have access, that of 1902-3, that of men teachers is given as less than £10, and that of women teachers as less than £8. The latest information accessible from any source is to be found in the report presented last July at the annual meeting of the National Educational Association by a special committee appointed to investigate the question of teachers' salaries. Facts were collected concerning 467 of the 547 towns and cities of 8,000 or more inhabitants. In these 467 towns there are 70,230 elementary school teachers (of whom all but 1,500 are women), 8,023 high-school teachers, and 6,213 principals of elementary schools. The average salaries are reported as follows:—High-school teachers, men £260, women £180; principals of elementary schools, men £308, women £194; elementary school-teachers, men £232, women £130. The average salaries for men and women taken together are £209, £238, and £132 respectively. The large difference in the averages for men and women "is to a considerable extent due to the fact that such a large per cent. of the men are in the cities of 200,000 population or over, where salaries are high as compared with those in the city of

average size." The average salaries of all the classes of teachers for all the cities are reported to decrease steadily with the decrease in the size of the cities. The committee had not inquired into the remuneration of teachers in rural districts, but it referred in passing to the fact that teachers might be hired for country schools for £5 to £6 a month, or even less, and might be paid by the month for only the lowest number of months desired.

In comparisons between England and America one must remember the point already mentioned as to the length of the school term, and also that American statistics usually cover not only elementary schools but high schools, which are included under the heading of public schools, when provided and maintained, as most of them are, from the public funds. There must also be taken into account the difference in the cost of living in the two countries, as well as the difference in the English and American scales of remuneration in other employments. Mr. Richard L. Sandwick, writing in the *Popular Science Monthly* for September, 1904, uses the census returns of 1900 to compare the payment of teachers and labourers. He finds that in that year the average salary of men teachers amounted to only £9 6s. a month for seven months and six days, or about £67 8s. a year—a rate considerably higher than that received by women teachers—while the mean annual wage of all labourers, including men, women and children, white and black, skilled and unskilled, is given as £87 12s. Occasionally, too, the American teacher has to meet financial demands which are, fortunately, unknown in England. It is notorious that in many districts of Philadelphia, for instance, the teachers, like the keepers of disorderly houses, have been required to pay a yearly tribute to the political "machine." The payment of an assessment on the salary has often been the condition not only of promotion but of the retention of an appointment.

As to pensions, the practice in the various States and cities varies as widely as in the matter of salaries proper. In most cases there are voluntary retirement funds, to which annual dues are paid by the teachers themselves, with assistance from the public funds. A drawback to the effectiveness of this arrangement is that few school authorities recognise as counting for a pension the years spent outside their own area, which is often that of a small district, and that the tenure of office is so uncertain that teachers find it difficult to maintain a position under the same school-board until they reach the age limit. The National Educational Association's Committee on salaries goes so far as to declare that "hardly a beginning has as yet been made in the United States toward creating a system of pensions for teachers." In making this statement the committee "desires to emphasise the distinction between a pension system properly so-called and all the various schemes of mutual aid, including retirement funds and old-age stipends, that have been organised, and are maintained primarily by the teachers themselves, and at their own expense."

MATHEMATICS UNDER THE NEW ARMY REGULATIONS.

By A. E. BROOMFIELD, B.A.
Winchester College.

(Concluded from p. 208.)

THE principal changes in the syllabus of Mathematics I. are as follows:—The use of the slide rule; the introduction of pure geometrical drawing as well as its application; elementary theory of functions treated graphically and a working knowledge of the elements of statics and dynamics. Experimental verification of theoretical work to be used whenever possible.

The slide rule requires constant use and practice if it is to be in any way a trustworthy aid to computation. It would facilitate this, and save much time in teaching, if a large slide rule could

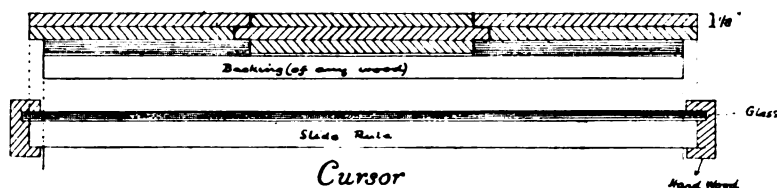


FIG. 1.

be fixed to the blackboard and used by the teacher in front of the class in blackboard demonstrations. Such a slide rule could be easily and cheaply constructed by anyone with an elementary knowledge of carpentry, and its constant use in checking logarithmic and other results would encourage the class to become expert in manipulation as well as enable them to understand thoroughly all the uses to which the instrument can be put. For those who wish to construct such a rule the following brief directions may not be out of place.

Obtain strips of $\frac{1}{8}$ " cedar (as generally used for fretwork) of the length required; just over 2 metres is a good length for demonstration purposes. Glue and screw them together as shown in the section (Fig. 1), taking care to select the grain so that the tendencies to warp may be compensating: any carpenter would prepare this and the cursor quite easily from the sketch. To graduate the rule: having first scratched the horizontal lines with a marking gauge, paste a paper metre scale [to be obtained quite cheaply from any firm of scientific instrument makers] along the middle of the slide. Figure the scale from 1 to 10, and use the edge of the cursor along the scale of logarithms as a guide for marking both edges of corresponding scales at the same time. It is recommended that the surface, pre-

viously rendered a smooth dull black, be scratched with a style and the marks made prominent by rubbing white lead over the surface. The scale should be figured 1 to 20 for marking the two upper scales. It will be found useful for instructional purposes to have the logarithmic scale on the same side as the ordinary scales, as the relation between the plain and logarithmic scales is immediately apparent. The reverse side can be marked for sines and tangents, and the proper use of these scales should be taught. No text-book in "slide" rules with which I am acquainted explains how these may be used in solving triangles. I hope I may be excused for giving a few instances of their use for this purpose.

For purposes of reference the scales are called A, B, C, D, reading in order from the top scale, B and C being on the slide.

The sine scale in this position is called S; when the slide is taken out and reversed so that the sine scale S is opposite A it is called "S reversed," or S'.

Ex. 1. Solve the triangle $a = 63$ ft.
 $B = 47^\circ, C = 52^\circ$.

We calculate $A = 81^\circ$.

Set 81° on S' opposite 63 on A.

Opposite 47° on S' read $b = 46.7$.

„ 52° on S' read $c = 50.3$.

Ex. 2. Calculate $47 \sin 43^\circ$.

Set 90° on S' opposite 47 on A.

Opposite 43° on S' read result on A [$= 32$].

Ex. 3. A tower AB is observed from P and Q to subtend angles of 30° and 40° . PQB are in

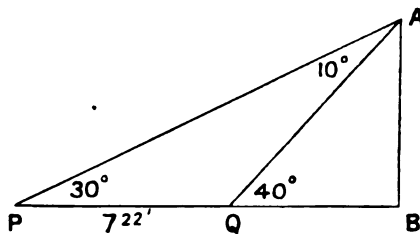


FIG. 2.

a straight line, and PQ is 722 ft. long: find AB. (Fig. 2).

Set 10° on S' opposite 722 on A.

Move cursor to 30° on S' [giving AQ on A.]

Move slide to 90° on S' against cursor line.

Move cursor to 40° on S' [giving AB on A.]

Result, AB = 1342 ft.

Ex. 4. Solve the triangle $a = 34$, $b = 26$, $C = 63^\circ$.
(Fig. 3).

First find AD and CD.

Set 90° on S^2 opposite 26 on A.
Opposite 63° ,, S^1 read AD = 23.08.
" 27° ,, S^1 read CD = 11.8.
 $\therefore BD = 34 - 11.8 = 22.2$.

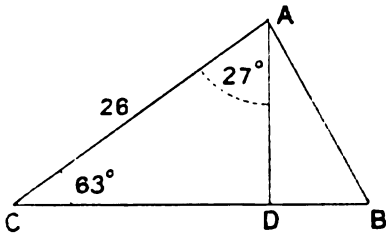


FIG. 3.

We now use the tangent scale to find B.

We cannot find $\tan^{-1} \frac{23.08}{22.2}$ as the angle is $> 45^\circ$,

so we find $\tan^{-1} \frac{22.2}{23.08}$.

Change slide so that T is against A.
Set 45° on T opposite 23.08 on A.
Read $43^\circ 50'$ on T opposite 22.2 on A.
 $\therefore \angle BAD$ is $43^\circ 50'$.
 $\therefore A$ is $70^\circ 50'$ and B is $46^\circ 10'$.
 c can be found as in Ex. 1.

Instances of the use of the slide rule in checking results are innumerable, but the above will serve to suggest the great value of the method and the absolute necessity of facility in using the instrument if it is to be in any way a time saver.

As for pure geometrical drawing, there is very little for me to add to what I said in my first paper; apart from the mere use of instruments the knowledge required is purely mathematical and should be taught as such. As regards instruments, very few are necessary, but these should be good. Do not have in the box any instruments the use of which is not thoroughly understood, and do not have any scales on the instruments with which the student is allowed to remain unacquainted. How often does one see a sector included in a box? and how many of those teaching geometrical drawing understand the complete possibilities of this instrument? I mention this as a case in point: In the early days of Addiscombe the instrument makers devised a box of instruments in which a sector was included, and to this day the box remains the same and is known as the "Sandhurst Box." The cost is roughly two guineas, and the instruments are not in any sense a workmanlike selection. The bows are too small and the compass too large; the points cannot be easily renewed, and there are no plotting scales. Messrs. Harling, of Finsbury Pavement, E.C., have made up a box for the writer, which is retailed at 29s. 6d., and contains all that is necessary for doing what is required, far

more than can be done with the present selection of instruments, and contains nothing that is not frequently used. Any of the other well-known makers could equally well provide a box on the same lines if required.

Though the sector is not an instrument of frequent use, a few examples explanatory of its use are appended for the sake of general practice in the use of instruments and facility in dealing with all kinds of scales. A sector, roughly speaking, does the work of a slide rule in dealing with incommensurables.

Ex. 1. Divide a line into any number of equal parts.

Scales used, those marked L, L.

Suppose nine equal parts are required.

Measure given line with dividers and open sector till the distance from 9 to 9 on L and L is equal to the given line.

Measure from 1 to 1, this distance is $\frac{1}{9}$ of the line.

Ex. 2. To obtain any decimal part of a given line.

Scales used as above.

Open sector till the distance from 10 to 10 is equal to the given line.

Measure off any decimal part required. Thus for 0.65 measure from 65 to 65.

Ex. 3. To inscribe regular figures of 5, 7, 9, etc., sides in a circle of given radius.

Scales used, those marked POL, on inner edges.

Measure radius of given circle.

Open sector so that the distance from 6 to 6 on POL is the same as the given radius.

Measure from 5 to 5, 7 to 7, etc., for sides of inscribed polygons.

Ex. 4. To find the length of chord subtended by given angle at the centre of a circle of given radius.

Scales used, those marked C, C.

Measure radius of circle.

Open sector so that the distance from 60 to 60 on C and C is equal to this radius.

From 53 to 53 will give chord of 53° , and so on.

Ex. 5. To plot an angle θ .

Scales used as for Ex. 4.

Describe circle with radius equal to distance 60 to 60.

Measure length of chord of angle required and mark it off.

Ex. 6. To find $\sqrt{a^2 + b^2}$, e.g., $\sqrt{6^2 + 5^2}$

Scales used, L and L.

Measure distance from 0 to 10 along either scale.

Open scale till distance from 6 on one to 8 on the other is equal to the first distance.

Measure from 6.3 on one scale to 5.6 on the other.

Measuring this along either scale from 0 we find it to be 8.43.

Ex. 7. To find $\sqrt{a^2 + b^2 - 2ab \cos \theta}$, e.g., when $a = 4.6$, $b = 5.8$ and $\theta = 43^\circ$.

Scales used, C and L.

Measure from 0 to 10 in L.

Set sector to this distance from 60 to 60 on C.C.

Measure from 43 to 43 on C.

Re-set sector to this distance from 10 to 10 on LL.

Measure from 4.6 to 5.8, giving result 4.

[The result by calculation is 3.97.]

Ex. 8. Solve the triangle $a = 63$, $B = 47^\circ$, $C = 52^\circ$.
 By calculation $A = 81^\circ$.
 Scales used, S and S on the other side of sector, not between and C.
 Measure 63 on any scale.
 Open sector to this distance from 81 and 81 on S S.
 b is distance from 47 to 47 = 46.7.
 c ————— 52 to 52 = 50.

The T.S.N. scales are logarithmic scales of Tangent, Sine and Numbers, and can be used with dividers as a substitute for the slide rule.

The TT, TT scales are natural tangent scales (1) for angles up to 45° , (2) for angles $> 45^\circ$.

The scale S between L and C is a scale of secants and is not of much use.

Very many other calculations, e.g., $\frac{3.6 \times 4.8}{1.9}$ can be performed by means of the sector.

It may not be out of place to suggest a method of practical working of problems involving three planes of projection which has the merit of exhibiting results clearly and at the same time not obscuring the idea of projection.

In Fig. 4, P is a point whose co-ordinates are

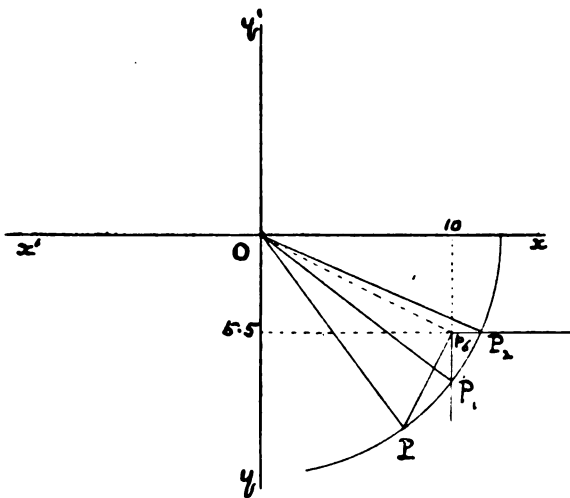


FIG. 4

10, 5.5 and 6; find the length of OP and its inclination to the axes.

The plane of the paper is the Horizontal Plane. yy' , and xx' the traces of the two vertical planes: P_6 the indexed plan of P.

$P_6P = 6$, and is at right angles to Op_6 . $OP =$ true length.

$$\begin{aligned} P_1ox &= \text{inclination to } ox. \\ P_2oy &= \text{————— } oy. \\ OPp_6 &= \text{————— } oz. \end{aligned}$$

In Fig. 5, P (44, 25.5, 29) Q (19, 15, 10) are two points in space, find PQ and inclination of PQ to horizontal plane.

Represent as before by co-ordinates and figured plans.

Set up $p_6P =$ difference of level (29-10) and p_6q . $q_{10}P$ is true length and Pq_6p the inclination.

In the practical work the student should be taught both to obtain results by means of given apparatus, and also to invent simple apparatus to test a given law. For example, the expensive sets of lever apparatus at present sold are quite unnecessary. Any lath of fairly uniform white wood, neatly bored, not at its centroid, and free to rotate about a decent French nail, gives just as good results, and demands a more thorough understanding of the principles involved than the balanced and graduated levers at present sold with standards and knife edges and much brass finish. Beech is

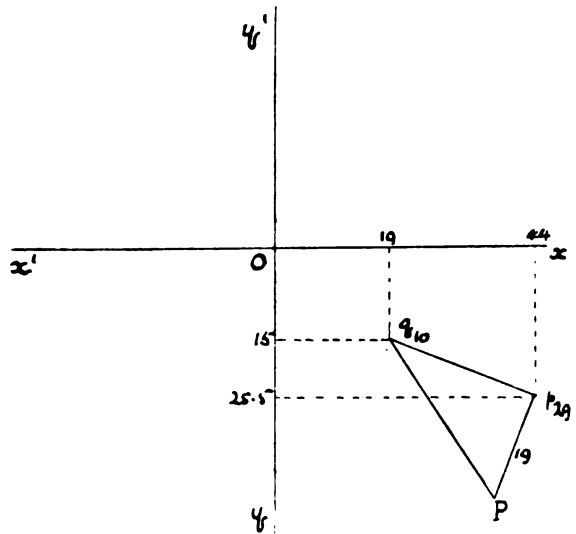


FIG. 5.

a good wood for the purpose, and it should be unvarnished so that the pencil marks after an experiment has been carried out can be removed with glass paper. French chalk and black lead should not be forgotten for reducing friction between wooden surfaces.

Attwood's machine is not worth having even if in its most expensive and elaborate form. The corrections necessary for getting a merely passable result are so many that the result is quite unconvincing. As an exercise in care and neatness in conducting an experiment it is very good, but needs far greater skill than there is expected from anyone who is not a competent physicist.

A simple form of Attwood's machine, good enough for rough experiments, is shown in the rough sketch. Two equal grooved wheels over which strings pass connected with two horizontal bars from the middle of which the weights hang by hooks (Fig. 6).

Attached to one of the bars is a hog's hair which draws lines on a swinging lath of wood (not shown), weighted to beat seconds, and to which a strip of paper, marked with a central line, has been fastened. A contrivance for removing the rider can easily be devised. Such an instrument gives very fair

results and is rapid in use, the time and distance being automatically self registered.

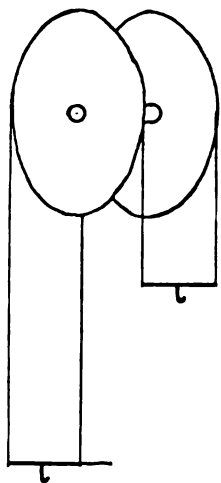


FIG. 6.

The higher part of the subject is arranged on mathematical lines, and suggests no very great change. The calculus, in its newer aspect, is well represented in Lamb's "Infinitesimal Calculus" (Cambridge University Press), a book which no teacher should be without, even if it is not generally used for class purposes. Greenhill's "Differential and Integral Calculus" (Macmillan) is also a very practical and suggestive work.

I append a list of books which I have personally inspected, all of which have many points of merit and may be profitably consulted by those who are looking for text books for general use.

ARITHMETIC.

AUTHOR.	PUBLISHER.
Pendlebury	(Bell).
Lock	(Macmillan).
Godfrey and Bell	(Bell).
"Tutorial Arithmetic"	(Clive).
Kirkman and Field	(Edward Arnold).
Layng	(Blackie).

ALGEBRA.

Hall and Knight	(Macmillan).
Baker and Bourne	(Bell).
Tuckey... ..	(Bell).
Lachlan	(Edward Arnold).
Ball	(Camb. Univ. Press).
"Tutorial Algebra"	(Clive).

GRAPHS.

Gibson	(Macmillan).
Hall	(Macmillan).
"Tutorial Graphs"	(Clive).

GEOMETRY.

Godfrey and Siddons... ..	(Camb. Univ. Press).
Baker and Bourne	(Bell).
Lachlan and Fletcher	(Edward Arnold).
Hall and Stevens	(Macmillan).
Morgan	(Blackie).
Warren	(Oxford Univ. Press).
Fletcher (Elem.)	(Edward Arnold).
Turnbull	(Blackie).
Barnard and Child	(Macmillan).

PRACTICAL MATHEMATICS.

Castle's "Manual"	(Macmillan).
" " "Beginners"	" "
" " "Technical Students"	" "
Ormsby	(Spon).
Cracknell, A. G.	(Longmans).
Stein and Topham	(Bell).

TRIGONOMETRY AND MENSURATION.

AUTHOR.	PUBLISHER.
Borchardt and Perrott	(Bell).
Lachlan and Fletcher	(Edward Arnold).
Hobson and Jessop	(Camb. Univ. Press).
"Tutorial Trigonometry"	(Clive).
Edwards's "Mensuration"	(Edward Arnold).
Stevens's	(Macmillan).
Lock's "Trigonometry of one angle"	" "
Lock's "Trigonometry"	" "
Pendlebury's "Trigonometry"	(Bell).

MECHANICS.

Eggar	(Edward Arnold).
Cox	(Camb. Univ. Press).
"Tutorial Dynamics"	(Clive).
"Tutorial Statics"	" "
Green's "Hydrostatics"	(Camb. Univ. Press).
Besant's "Hydrostatics"	(Bell).
Pinkerton	(Blackie).
Low's "Applied"	" "
Dobbs's "Geometrical Statics"	(Macmillan).
Loney	(Camb. Univ. Press).
Perry's "Applied"	(Cassell).
Baker's "Dynamics"	(Bell).
Minchin's "Dynamics"	(Bell).

PRACTICAL GEOMETRY.

Eggar	(Macmillan).
Harrison's "Solid"	" "
Kerr	(Blackie).
Morgan	" "
Kitchener	(Macmillan).
Le Neve Foster and Dobbs	" "
Hamilton and Kettle... ..	(Edward Arnold).
Wilson, 2 parts	(Longmans).
Marshall and Tuckey... ..	(Bell).

HIGHER MATHEMATICS.

Lodge's "Differential"	(Bell).
Lamb's "Infinitesimal Calculus"	(Camb. Univ. Press).
Greenhill's "Differential and Integral"	(Macmillan).
Chrystal's "Introduction to Algebra"	(Black).
Smith's "Co-ordinate Geom."	(Macmillan).
Loney's " " " " " " " " " " " "	" "

THE TEACHING OF GENERAL EUROPEAN HISTORY.

I.—INTRODUCTORY.

By W. H. WEEDON.
The County School, Richmond, Surrey.

IT has been said, no doubt with a certain amount of truth, that the average English boy leaves school entirely ignorant of the history of the Continental nations. In Germany, in Sweden, and in Norway, nearly every pupil at the age of fifteen or sixteen has completed at least one survey of general European history, and there are signs that before long a serious attempt will be made in this country to bring about the same desirable results.

For us, the initial difficulties are great. A careful selection of material will be necessary if we are to steer our course between two equally dangerous extremes. On one side we have the mere skeleton outline of facts, and on the other a course so full and complete that the time necessary for the work would be altogether out of proportion to the importance of the subject.

The syllabus of lessons here given represents a modest attempt to solve the problem in existing circumstances. The stories were carefully selected from general European history with the idea of giving the scholars in the lower forms of a secondary school some idea of the men who in the past did much towards the making of modern Europe. In choosing these stories due consideration was given to the kind of subject most likely to interest and at the same time provide the best opportunity for exhibiting the general conditions of life peculiar to the people at that particular time.

Thus, for example, when telling the story of "Rollo," the life of the Vikings could be described and contrasted with that of the French of the same period. The lesson on Dante would give an opportunity for a description of the life in the Republic cities, the Princes and so forth.

Such a course can never take the place of the systematic study of European history, but it certainly will present to the scholars, in graphic form, some of the most important events of the Middle Ages, and will greatly assist even quite young children in understanding the rise and progress of the nations.

LIST OF STORIES.

- (1) The story of Rollo the Norseman.
- (2) Haakon, the last of the Vikings.
- (3) The Cid and the Moors in Spain.
- (4) Henry IV. and the Popes.
- (5) St. Louis of France and the Crusades.
- (6) The Knights Templars and Philip IV.
- (7) The Swiss Confederacy.
- (8) The Jacquerie and the Peasants' Revolt.
- (9) Rienzi.
- (10) The Hansa League.
- (11) The Turks in Europe.
- (12) The Tartar Conquest of Russia.
- (13) Dante and the Republic Cities.
- (14) Francis of Assisi and Dominic.
- (15) Sir John Hawkwood and the "White Company."
- (16) Town life in the Middle Ages.
- (17) Monastic life in the Middle Ages.

The Rise and Fall of the Moors might well extend over two or three lessons, and the same might be said of most of the other stories. I have only mentioned those lessons which were actually given, but of course the list could well be made much larger.

It is difficult to obtain a text book, even for one's own use, which exactly meets one's requirements. I may mention a few of the books which were found useful in providing the sort of detail which boys delight in.

(1) "Introduction to the History of Western Europe." Prof. Robinson (Ginn).

(2) "General History." By P. V. N. Myers. (Ginn.)

(3) "State of Europe during the Middle Ages." Hallam. (For a very interesting account of Hawkwood.)

(4) "Eighteen Christian Centuries." By James White. (Gives a bright and vigorous account of the struggle between Henry IV. and the Popes, &c.)

(5) Dr. Raeder's *Historisk Laerebog for Middelskolen* (Aschehong & Co., Kristiania) is one of the best of the type of "General History" for class use in vogue on the Continent; but I do not know of any translation.

II.—FOR HIGHER FORMS.

By A. JOHNSON EVANS, M.A.

Any attempt to sketch out a course of European history for the children in English schools must necessarily suffer from tentativeness. The subject is so new to us. That which follows must therefore be taken as merely hints on which the practical teacher may base his ideas and lessons.

European history falls into two clearly marked divisions. First, there is that of the "middle ages," during which men strove after ideals which were finally unrealisable. Secondly, there is the "modern age," during which the States, falling apart and pursuing each its own interest, had ideals which were realisable, and in part realised. Each period has its own difficulties. The former suffers from the fact that the ideals of men are far removed from our own and almost incomprehensible to us—the latter, from the necessity of following so many different clues, of telling so many separate stories. The teacher's task must therefore be, in the first, to enter himself sympathetically into the ideas of that long ago time and to do his best to make his pupils do the same within the limits of their capacity. In the second, he must find a point or points from which the greatest unity of views can be obtained.

First, for the "middle ages." The key-words for that period are "Church" and "Empire." The proper understanding of these necessitates some knowledge of that pre-Christian period of European history which is included in the stories of Israel, Greece and Rome.

Of Israel, because the organisation of the Jewish Church, however originated, had its effect on that of the Christian Church, and the teacher should thoroughly appreciate the importance, *e.g.*, of the Epistle to the Hebrews, in which Jewish Christians were comforted with the fact that "*we* have an altar." And, of course, the New Testament must be known, or at least an outline of its story, for no knowledge of European history is possible which does not begin with the story of Jesus Christ.

Of Greece, because there we have the beginning of the conflict between Europe and Asia, of which the crusades are but an episode, because Athens and Sparta, and Aristotle as their interpreter, were influences in political thought even to Milton and English Puritanism, because in the struggle between Athens and Sparta we have the earliest conflict between imperialism and autonomy, because its philosophy affected the dogmas of the Christian Church, and because its literature was the subject-matter of the early Renaissance in the fifteenth century.

Of Rome, because its republic was the model and inspiration of so many states till our own days, because its empire gave to Europe an undying law, because the story which began with the mythical Romulus has not yet ended, because Europe is, or at least was till a hundred years ago, Rome.

The continuity of Rome must never be forgotten. The danger to do so arises in connection with the transference of the seat of Empire from Rome to Constantinople about 300. The Eastern part of the Roman Empire had a continuous territorial existence with many periods of greatness till the middle of the fifteenth century, and its memory was never lost among the Christians of the East. Russia and Greece are modern survivals or revivals thereof. The opinion of its "decadence," which we owe to Gibbon, is disappearing before the work of Finlay, Bury, and Frederic Harrison.

But a greater danger to the remembrance of the continuity of Rome arises in connection with Italian history in the fifth century. Our text books have so long familiarised us with the phrase, "the end of the Western Empire in 476," that Bryce and Freeman have written almost in vain for many of us. Rome continued to exist in the west, at least in the ideas of men, and even more than that. It is true there was for a time but one Emperor, and he an absentee to a large extent, but Roman law, Roman cities, the Roman, *i.e.*, the Christian religion, survived, and were eagerly received by the "invading barbarians" till Karl the Great (miscalled Charlemagne) and after him the Othos of the tenth century claimed the Emperorship as against their "Greek" rivals and established that beautiful ideal, so often near realisation, so elusive, the Holy Roman Empire of the German nation.

The Christian Church of the first millennium of our era must not be misunderstood, and the Papacy must not be antedated, or its powers exaggerated. The Catholic Church was not what both its advocates and enemies have called it, *semper eadem*. Its efforts must be sympathetically treated, specially in the conversion of the "barbarians," and in its struggle for even bodily existence against Norman and Saracen in the "dark ages" of the ninth and tenth centuries. We must not follow Milman in being scandalised at warrior Popes.

In the first three hundred years of the Christian era, the work of the Emperors must be studied. There were Antonines and Diocletian as well as Nero. The Christian Church was growing till Constantine found it worth his while to be a Christian, and to attempt to settle the theological differences at Nicæa. The subject of the next three hundred years is the "Wandering of the Nations." We need not trouble our pupils with details of Brunhild, &c., but they should distinguish between Goth and Vandal, Burgundian and Frank. Feudalism should not be forgotten or unexplained, and the importance of the "orthodoxy" of the Franks as distinguished from the

Arianism of the other "barbarians" emphasised, with its effect on the course and results of their entry into the Roman world. Gregory the Great is the great figure of those times.

The eighth century is the period of the coming of the Karlings, culminating in Karl the Great's coronation as Emperor in 800. His career is interesting on many sides. Then come the "dark ages" of the ninth and tenth centuries when Europe, under attack from Norman and Saracen, went back. This needs to be remembered, but not to be dwelt on. But with the coming of the eleventh century, European history begins to become interesting again.

The Othos in Germany revived the Empire, the Capets began to make France, the Christians in Spain began to make head against the Moors. And above all, the Church, under the lead of Hildebrand, began to shake itself free from feudalism, and the investitures controversy will require careful treatment, in order not to prejudice our pupils on one side or the other. It resulted in the growth of the powers of the Papacy, but this was not its object. Our great danger is to be too anti-clerical or anti-Romanist.

The twelfth century is the era of the great crusades, a movement which may be traced down to the suppression of the Templars in the early fourteenth century. It is also the age of further conflict between Popes and Emperors, now struggling about jurisdiction, for both civil and canon law have become important. This is the root of the often tangled story of the Hohenstaufen, of the Italian cities and of Guelfs and Ghibellines both in Italy and Germany. Something must be said of Alexander III., the contemporary of Henry II. and S. Thomas (Becket).

The thirteenth century is that of Innocent III., and later popes who destroy the Hohenstaufen and wreck the Empire in the struggle between spiritual and temporal rule. It is also the period of the growth of France under Philip Augustus at the beginning and S. Louis towards the end, of the coming of the friars, Franciscan and Dominican, of the Albigensian Wars and of Universities. It is the great century of the middle ages.

With the fourteenth century, we enter again on a period of decline. The Luxemburg Emperors reorganise the Empire as a German institution, and build up a house power in Bohemia, Brandenburg, &c., while the popes are exiled to Avignon under French influence, and thus become disliked in Germany and England. The Great Schism, which began in 1378, leads to the period of General Councils (attempts, in the end successful, to end the scandal of the Papacy), while the Hapsburgs undertake to rule Germany, and England and France begin their hundred years' war. The whole movement ends in the growth of monarchies which attempt to control church and nobility, successfully in France, Spain, and England, but unsuccessfully in Germany and Italy. Parliaments have been tried, and failed.

Such is the fifteenth century, the middle of

which saw the fall of Constantinople to the Turk, and the consequent quickening of the revival of letters, and the end of which saw the long sought discovery of the Cape route to India and the accidental discovery of what afterwards was found to be a continent in the west. The world, both of thought and of action, had grown larger, and the sixteenth century was one of great movements. Luther, Calvin and Zwingli shaped the Protestant revolt into organised churches, which were used by German princes against their king, and by French, Spanish and English kings against their princes. Spain rose to a temporary greatness by the wealth of the new world, but fell for want of the knowledge of economics and because she attempted too much in Italy, the Netherlands and England. France fell back, because of her religious wars.

The seventeenth century is for Germany the period of the Thirty Years' War and the consequent exhaustion. For Italy it is the period of exhaustion too and of submission to the Spanish Hapsburgs. For France and England it is the period of expansion in America, and at home of struggles between kings on the one hand, and nobles or gentry on the other. Europe in general sees the recovery of many lands to what we may now call Roman Catholicism and the doctrines of Trent.

The eighteenth century in Europe is a dreary story of dynastic wars, the chief feature of which is the gradual failure of France after the triumphant struggle against Spain, the growth of Prussia to a state of the first rank, and the advance westwards in influence and even in territory of Russia. The educated classes lost all belief in church or state till they were ready for the French Revolution. (Note the fall of the Jesuits.) But the interest of this century lies in the world duel between Great Britain and the Bourbon powers, the gaining and the partition of the British Empire.

Of the nineteenth century, is it not yet too early to speak? We begin with Napoleon, who swept away the effete governments of Europe and then fell before the rising nations of Spain, of Germany and of Great Britain and Ireland. After his fall, the next fifty years saw the slow and fitful advance of parliamentary institutions as means of voicing the wishes of the nations. And then in some ten years, Bismarck and the Italians redrew the map of Europe. The German Empire (without Austria) arises, France is thrust back from the Rhine, and Italy is united under the house of Savoy. The governments thus formed have their social problems—and the end is not yet.

It is obvious from this sketch that the subject is large, possibly too large for the time at our disposal. The following syllabus is therefore submitted as inclusive rather than selective. Let each teacher choose what portion suits him. Yet it hangs together, and no part is properly comprehensible without the rest, at least that which precedes:—

(1) History of Israel, specially the theocratic arrangements.

(2) Greece: the Persian Wars, the Athenian Empire, the Peloponnesian War, Alexander of Macedon.

(3) Rome: description of republic, and of the Empire, extent of dominion.

(4) The Christian Church of the first three centuries; its spread, its quarrels, to the Council of Nicæa.

(5) The Eastern Empire till 1453; Mohammedanism and its spread, the Crusades. Justinian's code.

(6) The Wandering of the Nations; influence on them of Roman law and of the Christian Church. Feudalism.

(7) Karl the Great.

(8) The Dark Ages (ninth and tenth centuries).

(9) Hildebrand and his problems. The Emperors and theirs.

(10) The Holy Roman Empire; conflicts between two systems of law.

(11) Italian Cities: republican and despotic.

(12) Innocent III.; the great period of the Papacy. Friars. Universities.

(13) France: Philip Augustus and S. Louis.

(14) The Babylonish captivity and the Schism: agitation against the evils of the Church: Councils.

(15) The Renaissance and America.

(16) The Reformation.

(17) Spain, and the Counter-Reformation.

(18) The Thirty Years' War.

(19) The Atlantic Powers. India and America.

(20) Prussia and Russia.

(21) French Revolution and Napoleon.

(22) The Holy Alliance and its Tasks: 1848.

(23) The Unification of Germany and Italy; Austria and France thrust back.

(24) Rise of Democracy.

Of books for boys and girls, there are none that I know of: Freeman's "General Sketch of European History" (Macmillan 3s. 6d.) is mere pennican. Others are perhaps too expensive. I quote the following names from J. S. Lindsey's bibliography. Adams, "European History" (Macmillan 6s. 6d.); Barnes, "Studies in General History" (Heath, 9s. 6d.); Colby, "Outlines of General History" (American Book Co., 6s.); Fisher, "Brief History of the Nations" (American Book Co., 6s.); Myers, "General History" (Ginn, 6s. 6d.); Sanderson, "Outlines of the World's History" (Blackie, 6s. 6d.); Sanderson, "History of the World" (Hutchinson, 5s.).

For the teacher of course there are many. Longman's "Epochs of History" are small, and tend too much to specialise on English history. Rivington's "Periods of European History" (8 vols., 6s. net. each) make the best general history. Longman's "Epochs of Church History" (15 vols., each 2s. 6d.) are also excellent. For special periods there are many books available, and they are daily increasing.

EDUCATIONAL AIMS AND METHODS.

SUGGESTIONS BY THE BOARD OF EDUCATION.¹

THE activity of the present Board of Education will not be questioned. It is for ever sending out fresh instructions, regulations and private reports. In its eagerness to find the right path (dare we say the lost path?) it surveys every acre of ground; and it does not in the least minify its office. The success of the Empire, it seems to say, is based on the success of the primary school.

Now the results of Codes, whether bad or good, are the results brought about by present or former Boards; and in every fresh document that comes from a great office is to be found a condemnation or a justification, implied or expressed, of previous sanctified or unsanctified documents that have gone before. The excuse offered by many institutions, that—

The ill deeds of other men make often our lives dark—

does not apply in the case of the Board. For thirty years and more it has, in the matter of subjects and methods, held the primary teachers of England in the hollow of its hand.

The document we refer to is no exception to others; but as it is "tentative," and as it "invites criticism," it is only fair to judge these suggestions as though no Board had existed until a year or two ago.

Before touching on details, we may ask what the conditions are which make a paternal policy in primary education possible and useful.

(1) You may dictate to your schools and insist on their using certain books and following certain methods. A fixed style of handwriting, of reading, of walking, as well as a fixed amount of history and geography learnt in a fixed way, may be settled by and from a central office. We say we do not like this in England; we say we never attempt it (as a matter of fact, every schoolmaster who has any personality does attempt it; he cannot help himself). We say it is un-English. It can, however, be done. Benevolent autocracy in matters educational, the carrying out of a single will, aided, guided, inspired and improved by consultation with others, and proceeding to action through the movements of subordinate wills, produces results.

(2) Or you may leave your schools alone, having once published an elastic code; and instead of always examining children, you may, by the machinery available, examine and inspect your teachers to find out not what children know, but what and how they have been taught.

This also would yield results, which would probably astonish those who are committed to harder and more hidebound methods. The method is dangerous; it has never been well tried, and it

could not be used without the enthusiastic assistance of an army of capable headmasters.

(3) Or again, you may compromise; you may advise or suggest. This is what the Board is doing, or says it is doing; and it is this that we have to consider.

Now, suggestion is of little use unless you possess the confidence of the person addressed. A well-meaning father suggests alterations in his son's Latin exercise; but the son may well be a fool if he listens; in the matter of oratio obliqua tenses the father does not enjoy his son's confidence. Nor is suggestion useful if it be next to impossible to carry it out; it would be manifestly foolish to suggest to a swimmer in difficulties that he should divest himself of his coat and boots. Suggestions, too, in regard to trivialities, as well as unkind, harsh or brutal suggestions, are wasted on everybody. But when you find a large number of capable, cultured inspectors making in *propria persona* to local authorities, headmasters and assistants, suggestions, the carrying out of which is *not* impossible, *not* too expensive, and, further, is aidable and aided by the Board itself; and when, above all this, the same body of gentlemen have proved on many occasions to headmasters and assistants alike their goodwill, their personal and social sympathy and their capacity for dealing with the multifarious questions of primary school life, then your suggestions are likely to be, in the horrid phrase of our document, "fruitful."

It must be admitted by every one that the spirit animating this last publication of the Board is fine. The advice is not dictatorial nor is it in the least bit harsh. The book takes up a noble attitude in the face of many difficulties; it deserves to succeed, and we can only regret that, as matters now stand, its success is problematical. It is only fair to give reasons.

(1) It is addressed mainly to teachers. It should be addressed mainly to local authorities, inspectors and headmasters. (2) It is much too long and it is full of unnecessary and trivial matter. (3) It makes, implicitly, three serious demands: (a) that thorough confidence should be felt in the Board and in the stability of its methods; (b) that a much greater sum of money should be spent on primary education; (c) that the teacher's week, already full, should be filled to overflowing.

Now teachers are a controlled and, under limitations, a controllable class, and wise suggestions as to method of proceeding from recognised authority are usually welcomed. But these suggestions must be at the outset few, workable, sensible, and no amount of blue books will make the present primary teacher into a missionary or a fanatic. Very often the teacher is a missionary, is a fanatic, and he is, of course, the better for it; but he belongs to an unpopular and comparatively empty profession; and the best way to increase the number of enthusiasts in it is to find out why the profession is unpopular and empty of men. On this subject, surely the most important of all connected with primary education, the suggestions are silent.

¹ Suggestions for the consideration of Teachers and others concerned in the work of Public Elementary Schools. Blue-book. Cd. 2638. (Wyman and Sons, Fetter Lane, E.C.) Price 8d.

When we look through the pages we find, among others, the following excellent items:—

(1) The book will be improved and added to and will become a *vade mecum* for the teacher (and, let us hope, for others). (2) Previous mistakes of other Boards are fearlessly admitted (pp. 37, 44). (3) A good deal of modern psychology is regarded as useless (p. 1). (4) Children under five should not be taught. (5) The teacher's business is regarded as the training of character (*passim*). (6) Children should be promoted when they are ready for it, and not when it suits the school curriculum (pp. 44, 45). (7) The adoption of what Mrs. Bryant calls the inverse Socratic method in teaching is advocated (p. 20). (8) A fearless grouping of subjects is recommended (p. 20). (9) Simultaneous reading and repetition is heartily condemned (p. 25). (10) History and geography teaching should be greatly improved. (11) A good deal of analysis and the whole of the minutiae of parsing should be abandoned (p. 39). (12) Reports should be regularly sent to parents.

In regard to (1) there is no doubt that the periodical publication of such a book *edited* (and not consisting, as this book does, of chapters roughly and readily contributed by different hands) would be an inestimable advantage to inspectors, headmasters and assistants, but the book should *grow* and should contain, *inter alia*, a full index, a bibliography and sketches of many methods in the teaching of history, arithmetic and elementary science. All fear of offending publishers, manufacturers of furniture and of gymnastic apparatus would have to be cast aside; for if the Board is to edit a teachers' handbook, such a book must point with an index finger, and speak with a clear voice. Paper covers, stitches that fall out, and a blue back are not in themselves of any great value.

In regard to (3) it is doubtful if any good at all is done by speculation (for what else is it?) on the presence or absence of faculties or innate ideas. The very briefest statement of what is now accepted by most psychologists should be enough; but of physiology and of the study of temperament *via* physiology, the teacher can scarcely have too much. The key to the teacher's work is knowledge of the child's body and its requirements; guesses at the child's mind may well be left.

In regard to (6) and (7) there are grave difficulties, but these are of their own making, and the suggestions in the book, which, of course, are not novel, are admirable.

In regard to (8) we require always the master-hand; but we have not as a teaching profession yet discovered that ciphering and drawing and plan and map and book-shelf making, and writing and reading and dates and data and memorising are, along with declensions and irregular verbs, *tools*, which are to be used for varied purposes. At present each is viewed as a separate end, not as a means which falls into a niche of its own. In any well-considered scheme history cannot be taught apart from geography (history *is* geography); nor can geography be studied without drawing. Again,

history cannot be taught apart from earth knowledge (physical geography and natural history), nor can this be studied apart from drawing. Nothing, singing perhaps excepted, stands alone. *The child must learn that they are all of use to one another and the reason for the interdependence.*

But side by side with the admirable suggestions enumerated above we find the following:—(1) The corporate life of the school should be encouraged by games (p. 10). (2) Playgrounds are referred to as actualities (p. 76). (3) Teachers are advised to get to know individual children (p. 15, *introd.*).

And we do not find any reference of importance to the status of the teacher's profession; to his over-filled classes; to his relation toward parents, to the local authorities and the State. We do not find any reference of importance to manners, dress, parents, newspapers, the streets, the Empire.

Nos. (1) (2) and (3) above may seem to some to be progressive and wise items; but to the teacher who loves his work and the children they are maddening. No Code, not even the 1905 Code, gives any encouragement to games. The famous Prefatory Memorandum, on which the Board so justly prides itself, strikes the true note, but no echo is heard in the Code itself. No Code demands that any school should have a playground other than a dangerous courtyard; no Code demands swimming, boxing, gymnastics of any kind, or any of the free bodily activities for which British boys are so well adapted. The whole subject, notwithstanding repeated warnings from recognised authorities, has been year by year shelved and neglected, though the makers of all Codes have never thought of bringing up their own sons without these physical advantages; and with this repeated shelving and neglect has gone on year after year failure to use the greatest opportunities ever given to the teacher and the nation. Personal cleanliness, activity, alertness, love of school, principles of honour, obedience, and all that can be called good in school life, follow in the wake of school games and physical training carefully managed and controlled. Respect for the teacher and the subjects taught, the glow of life, the absence of dullness, the encouragement of the weakling, all these come from the play-ground, the bath, the compulsory activity. It is little short of indecent for the Board and local authorities to leave the most important side of primary school life to chance, to private benevolence and to the enthusiastic teacher; and the headmaster and assistants who know and feel their business look eagerly but uselessly through every fresh Code to see whether any heavy type on early pages points to the woful results of the neglect of the child's body. The glib and evidently sincere phrases of these suggestions do not touch the fringe of the subject; the present "physical training" and naive remarks on hygiene are equally remote, and until the subject is touched the money spent in the primary school will be in a great measure money thrown away. Great departments never lead; they follow slowly in the wake of public opinion; and public opinion is only now awakening

to the State duties in regard to the physical welfare of the young.

To speak in a figure, we hear a good deal about the colour of the wallpapers, the painting of doors and the number of rooms in an educational house, but little about the foundations *and less about the drains*. Yet, when all is said and when we note all the omissions, the book is a fine piece of work and it runs on a high level. There is nothing new in it; but it is a new and a brave thing to say what is said in these suggestions to the primary teachers of England. Will they, will the men teachers, buy and read the book? Or will the Board send a copy to every inspector, every headmaster and every assistant in the kingdom?

INSTRUCTION AND TRAINING OF PUPIL TEACHERS.¹

By A. J. ARNOLD, B.A.

Principal of Pupil Teacher Centre, Sheffield.

THE arrangements of the Board of Education for the instruction and examination of pupil teachers appear to be approaching finality. In three circulars issued in rapid succession, and in the Regulations for 1905-6, Mr. Morant explains in some detail the principles governing the latest changes. Such a course has probably been rendered necessary by the difficulties education authorities have encountered in meeting the large demands of the Board in the matter of pupil teacher instruction. We do not yet quite know where we are, but April, 1907, will probably find us steering a simple course in smooth waters.

Probably the most important change, from the point of view of the schoolmaster, is the alteration in the name and character of the final examination of pupil teachers. The King's (Queen's) Scholarship Examination was originally what its name implies—an examination for scholarships enabling the successful to obtain professional training in a normal college. The scholarship soon took the form of a grant to the college, and not until the establishment of Day Training Institutions did any money find its way directly into the scholar's possession. In recent years, at least three-fourths of those who passed the examination had no intention of seeking normal training, but continued to teach in schools—many ultimately took the Certificate Examination as "acting" or untrained teachers, but a very large number desired no further education than they had obtained as pupil teachers. So that, as Mr. Morant states, "the function of the King's Scholarship Examination as a preliminary stage towards the Certificate Examination has probably become more important than its function as an entrance examination for

training colleges." The name "Preliminary Examination for the Certificate" is therefore to be substituted for the sixty years old title of King's (Queen's) Scholarship Examination.

It is satisfactory to note that, by implication, the doom of the badly-prepared or inefficient or unambitious ex-pupil teacher is foreshadowed. The primary school child (especially in the rural districts) has too long been the victim of a class of "teachers" many of whom would have found great difficulty in earning their livings as day labourers or factory hands. To enable those to qualify who desire to do so, many authorities are providing evening instruction for these teachers, and the movement might well become general. In some cases no fee is charged, but attendance is compulsory under threat of dismissal if the proper qualification is not obtained in due course. The response to these local edicts is often pathetic or ludicrous, according to the point of view. Students of 40 and upwards are common enough, and in one class a widow of 56 presented herself; in another the father of a large family attended to receive similar instruction to that given years before to his daughters, then pupil teachers. But in spite of these hard cases the plan is a good one, and the oral instruction much to be preferred to coaching by correspondence, previously almost the only kind of instruction available for these uncertificated teachers.

The King's Scholarship Examination has been heartily denounced for many years. It demanded a rather low standard of attainment in a large number of subjects, the object of My Lords being apparently to ensure that candidates possessed some acquaintance with every subject taught in the elementary school. Its effect on the best candidates was depressing, for the list was issued in strict order of marks, and candidates crammed up minute details of topography or chronology in the struggle for places near the head of the list. The wide reader and the enthusiast found in it no encouragement, and the acceptance of a pass at matriculation as an alternative was welcomed by teachers and students alike.

We are disappointed to find that, although "the distribution of subjects in the recast examination has received the most careful consideration of the Board," the general character of the syllabus has not changed, and there is the same lack of elasticity, the same *omnium gatherum* as before, and it is safe to prophesy that it will be the most unpopular examination in the market. After passing in the eight subjects of Part I., a preliminary test, we are told, "by no means of a perfunctory character," the candidate presents in Part II. three compulsory and one optional subject to which three other optionals may be added. "Distinction" may be earned in these latter seven, and as the usual competition for marks of distinction is bound to come, the whole thing will be a weariness to the spirit of teacher and candidate alike.

The inclusion of music (in both notations) and drawing among the compulsory subjects is a tactical mistake, unless they are to be compulsory in name

¹ Board of Education Circular 522: March 1905. Circular 530: July, 1895. Circular 536: September, 1905.
Regulations for the Instruction and Training of Pupil Teachers: Cd. 2577. (Wyman and Sons, London.) 3d.

only. Many eligible candidates will shy at these, and many good students lost in the future as in the past. Elementary schools are now built of such size, in all but the smallest towns and villages, that one or two members of a staff properly selected are sufficient to take all the singing and the drawing in the school. Were we discussing secondary schools, the requirement would at once be seen to be absurd. Needlework also is a compulsory subject for women, but here again the Board does not require an examination knowledge of manual work from the men, although the subject is prescribed for pupil teacher centres. Why differentiate? Much as we may deplore the fact, the making of garments in the homes of elementary school children is almost obsolete. The use of garments woven entire, and of machine-made under-clothing, has banished the needle except for the purpose of mending. Still, the subject is worth retaining as furnishing for girls a valuable hand and eye training, and is withal of a stupendous antiquity.

The Board might well consider whether the syllabus of compulsory subjects is not seriously overloaded.

In Part II. there are several features of interest. The examiners have the task of setting a paper on English Literature of a general character. A year's reading cannot be very wide, and it seems better, in the view of most teachers, to prescribe set books. In a recent examination of the Board in history, about forty questions were set, from which something like half a dozen had to be selected. Do the same for a literature paper, and the candidates will spend half their time in reading questions.

The history course is on excellent lines. It includes (1) the outlines of English history; (2) the main landmarks of European history; (3) the duties and rights of citizenship.

In geography there is some indication, not so marked as one might desire, that the elements of geographical science will be expected.

The science course is simple, and is so arranged that the show apparatus of the lecture room will give place to the more simple operations of the students in the laboratory. A certificate of thirty hours' laboratory practice is required from all who take a science paper.

The mathematics syllabus, though extremely elementary, is on right lines. The use of instruments is compulsory, the use of algebraic symbols in arithmetic allowed, long operations or complicated numbers will only creep in by accident, squared paper will be used. The mensuration is compulsory, and the new methods may be used in geometry. Euclid still remains as an alternative course.

An important change in the new Regulations is the abolition of the plan whereby a sessional certificate following a course of twenty-four University Extension Lectures (in English, or History, or Geography or Languages) could be offered in place of the corresponding paper, and could be credited with a mark which might reach 125 per cent. of the corresponding maximum. A

recent enquiry of the Cambridge Local Lectures Secretary showed a large balance of opinion in favour of continuing the scheme. Given a good lecturer, the benefit to intelligent pupil teachers was certainly considerable. But the thing is only possible in large towns, and the village pupil teacher and his schoolmaster complained of the injustice of increasing the handicap upon their work, already considerable through lack of local facilities for instruction. Even those who admitted the broadening influence of a course of good lectures thought the time consumed in the preparation of weekly papers excessive.

The attitude of the Board towards university examinations is occasioning much unrest in training colleges and pupil teacher centres. For some few years the Board appears to have discouraged the graduation or partial graduation of elementary teachers before certification. This course appears unwise in the interest of the schools and of the teachers. The best elementary teachers will graduate, it is a common ambition among them; whether should they be allowed to do so during the period of comparative calm in their lives, as pupil teachers and students in training, or whether should they be compelled to defer it until after certification, at the most trying period of their professional careers, to the detriment of their own health and of the quality of their work in school? Local education committees are as desirous as the students themselves for the former course, for many of them pay graduates a bonus of £10 per annum on the commencing and future salary; the Board itself has indicated its opinion that the best pupil teachers should pass a matriculation examination before leaving. For what purpose? to put aside their books for two years, in order to concentrate on Arithmetic and History and English Grammar? It would seem the wisest course, as well as the most logical, to afford these students an opportunity to finish their degree work concurrently with their normal training, since they cannot take up the latter as a post-graduate course.

The Board certainly provides for these students, but its requirements are excessive. They must either (1) pass the Preliminary Examination with distinction in seven subjects (out of seven taken); or (2) pass an equivalent examination. Distinction implies a standard equal to London Matriculation in all but English Language and Literature and History; in these it is rather higher. Evidently there is at present no public examination which the Board can accept as alternative, and the Universities are invited to modify their existing arrangements so as to provide alternatives acceptable to the Board.

Mr. Morant (or Sir William Anson) expects too much. London Matriculation, or that of the Northern Joint Board, is surely good enough for all ordinary purposes, and the course suggested will lead to a lamentable amount of overpressure, for these students will not be balked of their degrees, and their local authorities will probably support them.

The Regulations contain little that is new. Pro-

vision is made to end the confusion and inconvenience that have marked the period of transition from the old to the new system, a transition carried out with remarkable smoothness, having regard to the radical nature of the change and the many conflicting interests involved. When the new system is fully operative, all apprenticeships will run from August 1st to July 31st; no pupil teacher will be released before the end of his engagement—or, if released, the whole of the annual grant of £7 will be withheld; the passing of the King's Scholarship Examination (or its successor) will not confer recognition as uncertificated teacher until after the normal close of the apprenticeship. Provision is also made for the unifying of the instruction of pupil teachers whose apprenticeships at present terminate some in December and some in July, by allowing considerable freedom to authorities to lengthen or shorten apprenticeships, so that the period of instruction may continue to, or be terminated by, the date of the King's Scholarship Examination.

The pupil teacher problem, as it is presented to authorities administering rural districts, is not yet solved, and probably never will be very satisfactorily settled. Yet the rural schools have long furnished a steady supply of elementary teachers of good physique and strong mental qualities, teachers who have done excellent work in the towns. This supply seems to be in danger of extinction from two causes; the local authorities discourage migration, and the increasing advantages of the urban centres of instruction have gradually crowded the rural pupil teacher out of the training colleges. The Board appears to be desirous to help the rural teachers; its method is to lower the standard for admission to the Training College, so that a training college may now, should it so desire, fill from its own locality. The tendency is to localise more and more, and we seem to be approaching a time when every Norfolk pupil teacher will enter a Norfolk training college, and then receive appointment under the Norfolk County Council. Let us hope he will not spend all his summer holidays at Yarmouth!

A small but (to teachers) significant item appears as Regulation 29 (b). No pupil teacher may attend any outside class over which the Board has control, unless with the written consent of the head teacher of the pupil teacher centre. In future, then, the course of study mapped out for the pupil teacher by his proper adviser will not be interrupted to satisfy some irresponsible or interested person.

To meet the wishes of many authorities, the system of concurrent instruction and training is no longer insisted upon, and under the present regulations it is possible for a pupil teacher to spend two whole terms of one year and one whole term of the other in the pupil teacher centre or secondary school. Doubtless this is an easier plan than the former for purposes of administration, but it is more than doubtful whether its effect upon the pupil teacher, either as pupil or teacher, will be equally satisfactory. It remains to be proved

whether he can be switched off or on to a course of study or training, with quiescent intervals of four or eight months, in one or other direction, without serious hindrance to both.

The Circular of September, 1905, is administrative merely, and announces the publication of lists of successful candidates at the King's Scholarship Examinations of 1905 and 1906 simultaneously in June, 1906. Training college authorities will thus have until their re-opening in September to make their arrangements, and candidates who have failed will be able to go on with their preparation for the next examination without a break. The list of successful candidates at the Certificate Examination for untrained teachers will appear about September, and that of the examination of students in training colleges in January of each year.

SCHOOL TRAINING AND SCHOOL ORGANISATION.¹

IT is not quite easy to see what good purpose Mr. Hughes' book is likely to serve. The writer is evidently an industrious and enthusiastic friend of education; and there is no manner of doubt that he reads very copiously the things—good, bad, and indifferent—which are said in these sad days about education. But he quotes from his own and other commonplace-books with equal gravity and apparent conviction the merest rodomontade and the most close-reasoned philosophy. His book is, indeed, no better than the many ill-digested and pretentious monographs and manuals, mostly American, which give the enemy weapons, and are the despair of the working folk who, face to face with practical difficulties, yet (there is a "yet") believe that the serious philosophical study of school-training problems is possible and useful.

He tells us that "here we paint the picture of national education in broad splashes of colour;" the result suggests very broad splashes indeed; the famous "pot of paint," in fact. He might have concentrated what he has to say of real point and originality in a score of pages. He possesses that dreadful gift, an apparently endless flow of speech. He makes much play with exclamations; his pages read as if they had been contemporary addresses picked out with questions. "For even from the monetary point of view, consider how invaluable the work of inventors and searchers after truth is! Who can appraise the deeds of Faraday or estimate the value of the discovery of antiseptic treatment! What a national gold mine was George Stephenson's work!" Yes, indeed, as George Sampson would have said. On nearly every page there are *ad captandum* arguments in this form more or less disguised. "Surely," to quote the late Sir George Jessel, "is no argument."

¹ "School Training." By R. E. Hughes. 110 pp. (W. B. Clive.) 2s.
"School Organisation." By S. E. Bray. 217 pp. (W. B. Clive.) 2s.

And his assumptions! (How catching is style!) "For ages the school has more or less deliberately refused to recognise this aim—this 'utilitarian' aim, as it is often scornfully termed. And the teacher has considered his duty completed when he has given his pupil the *instruments* of learning—such as the elements of reading, writing, arithmetic—without giving him at the same time the desire and ability to use them. It has been and still is held almost universally by instructors, that it is no part of the duty of the school to provide any kind of direct preparation for the life the pupil will take up immediately he leaves school." . . . Can Mr. Hughes ever have seen a school?

The cheap journalistic English, frequently highly incorrect, which abounds in the book is not more annoying than the cheap and superficial statements of what the writer propounds as facts. "It is certain," for instance, "that the mediæval priest looked upon the body as a vile casket in which precious pearls lay." "Only the head and the heart were trained; the hand and the senses generally were ignored." And yet this solemn platitude: "Whatever revolutions may occur in school work, I am convinced that the bulk of it will always be devoted to mental training, not because other forms are less indispensable, but because there is in their cases less need for direct teaching."

For a laborious combination of verbiage and—well, nonsense—it would be hard to beat the following:—

"The first question you would put to yourself in beginning a lesson would be, 'Well, now, what are they (my pupils) going to do? certainly they shall not merely sit still and listen to me—nay, they shall not even merely take notes. They must take an initiative part. They shall open the discussion, face the difficulties, argue the points, and I—well, I will do as little as possible—I will keep myself in the background. I will be content to suppress my natural inclination to take the lead.' 'What is the great art in teaching as well as in writing?' asked Fouillée, and he answers it, 'to know when to stop.'" Alas! yes.

If Mr. Hughes has evidently had little school experience, so also it is unfortunate that he has read only the most modern writers (and of these the dismalest) on education. "It was," says he, "and perhaps is still held that to make education pleasant, attractive, and easy, was both dangerous and delusive, and until a few years ago this theory was rigidly applied in our primary and secondary schools." And then follows a theatrical denunciation of the "infant schools of twenty years ago." It is not worth while—even to the extent of quoting Lucretius—to prove that, if severity has often been too frequent in the training of children, kindness and urbanity were in use long before the generation known best to the writer. To place such a statement as the one we quote before (say) young students is not less than unconscionable; and to put it before people who are more than twenty years old is to invite them to lay the book down.

"We persist," he writes—and the English is his own—"in the children marking time . . . and

only when we revolutionise our theory and practice will school life ever exercise the fascination over children that we want it to do. We must inscribe 'growth of power in our pupils' as a maxim." There is nothing but a short school-boy word that adequately fits this noble sentiment.

The writer quotes Thring's most turgid utterances in ways and in contexts which should flutter that eminent man's ghost. He stands up for what he calls the "discipline value" of subjects, and denounces certain studies as lumber without giving us anything like a test to distinguish between the real Simons and the false. Words, words, words. And they are not made more impressive by leaded head-lines, "Advice from France," "The aim of Moral training is towards Growth of Liberty," "Morals and Creeds," and so forth.

We have more than exhausted the space at our disposal, but not a quarter of our notes on the book. But one or two things may perhaps be added. The author finds "over-discipline" everywhere, and he points out the results in three well-known countries. In England there are portentous "signs of the disappearance of that variety of character, that sturdy independence, and that pride of breed which were the distinguishing characteristics of our grand-parents." "Pride of breed"! The brutes in Gilray's pictures, an older generation, who thought that one Englishman was equal to six Frenchmen, are without doubt adequately represented in the "mafficking" crowds of yesterday. In the case of Germans, our author finds that "when they enter the world, unless they can drop into the particular part of the national machine for which their training specially fits them, they are helpless, and appear to have completely lost the faculty of adapting themselves to new conditions." This, of course, explains the notorious failure of Germans to get a living either in their own country, or America, or England—or anywhere else where there is money to make. As for Frenchmen, "before they leave school they have lost all resource, all adaptability, and much manliness."

And one little gem, finally, for the esoteric: "The mean attitude could not exist in Rugby under Arnold nor the cynical attitude under Thring at Uppingham."

Mr. Bray's book is very different from that just noticed. It is by no means free from professional cant, most of which, however, is contained in the introductory chapter. There are also some dubious reasonings and *non sequiturs*; for instance, the odd statement that *because* this is a "democratic" country, *therefore* "the school must be in touch with public sentiment and be limited by the public purse." The first part of this apodosis may be correct; but it is mainly the "democratic" countries which produce the philanthropists who will not allow the school to be "limited by the public purse."

But a sensible note is struck early, and is maintained, with here and there a lapse, sometimes consecrated by a quotation, to the end of the well-

filled little book. The author is very soon at grip with facts; no later than page 8 he orientates himself by looking fairly in the face "the Regulations of the Board of Education and those (if any) of the local authority." There is plenty of "wool" in this procedure, and not an inordinate amount of "cry." The book may therefore be cordially commended to teachers and managers, who, not being professional reviewers and liable to irritation at a poor style, will have in small bulk a vast amount of accurate information and sensible reasoning on every-day school problems.

To follow the author right through his work would be to write another book; whereas, for the present, he has said all that needs to be said on "organisation" to the readers whom he addresses, "students in training preparing for the Final or Certificate examination," and others concerned with the same subjects in public elementary schools.

His course takes him through the various topics connected with the organisation of the single class, the school as a single institution and as a department; this leads him to discuss district-administration and the relations of similar schools for pupils of different grades and for special purposes. His chapter on discipline, though he gives way to some sentimental weaknesses (the school motto and the May Queen Festival might well have passed unnoticed), is useful and suggestive. On the kind of records needed and the keeping of them he will be found an admirable guide; and his last chapter, dealing with premises and certain important forms of apparatus, testify to his highly practical competence.

He gives valuable and tactful advice to head teachers and their assistants on their mutual relations; he does not shirk difficulties, but puts *pros* and *cons* in clear order; he sometimes sits on the official fence with perfect propriety, as in the matter of co-education, while betraying to the acute intelligence (that of his reviewer) that he is inclined to the wrong side; he discourses better on the subject of "promotion" than any writer we have been condemned to read; and he gives us a large number of useful, practicable time-tables. In consideration of his workmanlike and most industrious little volume, we may forgive him his cumbersome style and his occasional solecisms. Let him say "different to"; that "in the highest classes a phenomenon commonly arises"; that "a vitalising power antidotes the deadening influence of dry bones"; that "the *creche* has now become a reality in most European countries and in America."

He has put together an honest and useful book.

A Book of Song Games and Ball Games. By Kate F. Bremer. 1-40 pp. (Phillips) 3s. 6d.—The author and the distinguished preface-writer, Director Otto Salomon, of Naas, make here a praiseworthy attempt to convert us to Swedish gymnastic games, but, although the preface contradicts us, we hold that these "games" are not "games" enough for England. Action songs they are; physical drill they may be; games they are not. The music is Swedish; the book itself and the songs are in English. The preface might in a second edition be looked over by an English writer.

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THE MYTHS OF PLATO.¹

THE body of this original book consists of the Platonic myths, text and translation, with remarks on their substance; and to these is prefixed a long introduction, in which the author examines the elements of the myth and its psychological action. The translations are good. With regard to Prof. Stewart's own style, it is peculiar: somewhat abrupt and unpolished, but vigorous and arresting. Prof. Stewart might have pruned his work with advantage; we see little use in some of the specimens of fable and poem which he quotes in the Introduction, for he might easily have contented himself with a reference to types of stories which are well known. But his own ideas are suggestive, and they contain a new view of the secret of poetry which is worth considering.

Prof. Stewart postulates something in the soul of man which transcends experience—the principle which Plato seems to have had in view when he propounded his theory of reminiscence. This is not reason, thought or will, but an instinct that life is worth living, which must have been implanted in us by nature, for without it life would soon cease to be. The function of great poetry is to take us back, for short and intermittent lapses of time, to the state of feeling when this instinct was induced, which he calls the "state of dream-consciousness," with its "atmosphere of solemn feeling spreading out into the waking consciousness which follows." This will explain both the nature of the myth—which is not a proof, but a solemn affirmation of the faith that is in us—and the reason why such affirmation has any effect on mature minds.

An appendix discusses the mythology and metaphysics of the much-neglected Cambridge Platonists. Whilst not very merciful to their learning, Prof. Stewart has sympathy with their ideal, that "ecstasy" which is not a trance but a holy life. He might perhaps urge that both Plotinus, from whom they seem to have got the idea, and the Platonists, had some truth. The trance or ecstasy being the "lapse into the dream-consciousness" whose influence, spreading out into the waking consciousness, purifies the life. The central doctrine of the Platonists, the doctrine of ideas, Prof. Stewart traces to the affirmations of the Platonic myth.

We commend this volume to the thoughtful student. It is not only a new light thrown on Plato, but has value for the literary critic, since the "lapse into dream-consciousness" is taken as the essence of poetry. Definitions of poetry are notoriously unsatisfactory; but such a view as Prof. Stewart's commends itself more than anything like Matthew Arnold's "Criticism of Life." It also includes in one volume, within

¹ "The Myths of Plato." Translated, with Introductory and other observations, by Prof. J. A. Stewart. xii. + 532 pp. (Macmillan.) 14s. net.

a small space, all the most transcendental and morally fruitful of Plato's work, and enables the reader to form a rounded conception of his poetic faculty.

TECHNICAL EDUCATION IN EVENING SCHOOLS.¹

THE author bases his apology for the issue of this book on the interest which is being exhibited at the present time in technical education, and he expresses the hope that the book may help in the removal of those difficulties which tend to reduce the efficiency of such education in evening schools. No apology is needed, and the hope of the writer will undoubtedly be realised. The book is a welcome and helpful contribution to the solution of one of the most difficult problems in education.

Chapter I. contains a short general discussion of technical education and the place of the evening school in a general scheme of education. Incidentally the vexed question of the distribution of an apprentice's time between school, college and works is discussed, and much useful information as to the different systems recommended and adopted is given.

Chapter II. deals with the proper functions of the evening continuation school, discusses its difficulties and shortcomings, and makes many valuable suggestions with regard to its organisation and curriculum.

In Chapter III. the difficulties and defects of evening technical classes are very fully dealt with, and in Chapter IV. the "tendencies" of recent effort to overcome the difficulties and eliminate the defects receive special attention. The tendencies towards the adoption of an admission standard of attainment and age, towards the adaptation of instruction to industrial requirements, and towards the organisation of systematic courses of instruction, are carefully considered in full detail and illustrated by a surprising mass of pertinent and well-arranged information.

Chapter V. discusses the attitude of employers of labour towards technical education. The author, whilst admitting the general apathy of the British manufacturer in this matter, reminds us of many cases of encouragement and generous help from individual employers.

The relation between evening and day technical schools is considered in Chapter VI. From a careful analysis of a large number of day and evening courses the author comes to the conclusion that "the main difference between day and evening curricula is the neglect of the fundamental subjects by the latter." It is somewhat doubtful whether the author's view that the evening school can be considered as a link in the same chain of education as the day school is correct. The even-

ing technical school and the day technical college are surely connected not "in series" but "in parallel."

Chapters VII. and VIII. deal with subjects of instruction and organised courses of instruction. The logical sequence of subjects and their correlation in systematic and progressive courses are fully discussed and illustrated.

In Chapter IX. some special problems bearing on the supply of teachers, the provision of suitable buildings, and the introduction of systematic courses of instruction, are considered. The training of technical teachers is one of the greatest difficulties of technical education. During the last twenty years the Science and Art Department, South Kensington, did most valuable work in training science teachers to keep pace with the development of education in science, and it is surprising that no similar effort has been made to train technical teachers. The City and Guilds of London Institutes might have done much to solve this problem.

Considered as a whole, the book is written with great insight and full knowledge of the whole question of technical education. It contains a wealth of detailed information, collected and sifted with care and discrimination, and used with moderation and judgment in support of the criticisms and arguments put forward by the author. The book should be of great service to teachers and organisers of education and should be in the hands of all members of education committees and governors of technical schools.

A TREATISE ON CHEMISTRY.¹

ADVANCED students and teachers alike in this country will welcome the appearance of a third issue of Roscoe's "Chemistry." The new edition has been completely revised and brought up to date with the assistance of Drs. H. G. Coleman and A. Harden. In the eleven years which have elapsed since the appearance of the former edition chemistry has advanced greatly in all its branches; almost every page of the present volume bears silent testimony of progress.

The book preserves most of the features which have made it so popular. It commences with a lengthy historical introduction which takes the reader up to Wöhler's synthesis of urea in 1828, a synthesis of prime importance as breaking down the supposed impassable barrier between organic and mineral chemistry, which has been followed up to such good purpose that to-day the chemist has not only succeeded in preparing artificially fats, carbohydrates and purine derivatives, but, latterly, even simple proteid derivatives.

Some hundred pages are devoted to the general principles of the science, including the properties

¹ "Technical Education in Evening Schools." By Clarence H. Creasy. xxiv. + 309 pp. (Swan Sonnenschein.) 3s. 6d. net.

¹ A Treatise on Chemistry. By Sir H. E. Roscoe, F.R.S., and C. Schorlemmer, F.R.S. Vol. 1. The Non-metallic Elements. New Edition. xii. + 931 pp. (Macmillan.) 21s. net.

of gases, liquids and solutions, and an account of the experimental methods of determining molecular weights.

The non-metallic elements are then dealt with in turn, commencing with hydrogen and the halogens, the elements of the oxygen group, nitrogen, phosphorus, carbon, silicon, and finally the gases of the helium group. As in earlier editions, special attention is paid to the accurate description of progress in the more important branches of technical chemistry; thus to the chapter on sulphuric acid an account of the manufacture of sulphur trioxide and of fuming sulphuric acid by the contact process has been added. This process, which involves the direct combination of sulphur dioxide and oxygen in presence of platinum acting as a catalyst, was first used on a technical scale in this country by Squire and Messel; its elaboration by the Badische Company to give them the large amount of fuming acid requisite for their indigo manufacture has been one of the triumphs of modern chemical technology.

Under the heading Carbon, an interesting chapter is introduced on the nature of flame and the combustion of hydrocarbons, which includes the recent discussion between the advocates of the rival theories of "preferential combustion" and "hydroxylation."

The pages devoted to the elements of the helium group remind us of one of the most startling chapters in the history of chemistry, whilst the description of the supposed production of helium from radium introduces altogether new conceptions into the science. Enough has been said to show that the work fully maintains its former high traditions.

GEOGRAPHY AS NATURE STUDY.¹

THE following suggestions are intended not to create a distaste for the proper study of grammars and lexicons, but to stimulate the desire to learn the meaning of things. In the teaching of geography, the home field should be used to the fullest extent possible. The rill is a river in miniature. It obeys the same laws, does the same kind of work, and may teach the same lessons. If we understand the hills and the lessons they teach, we have a good introduction to the secrets of the mountains. The pond or the reservoir may show us many of the phenomena of the sea. The plant and animal geography of our own country is influenced by and conditioned upon the same forces which operate the world over.

The Study of the Weather: Meteorology.—This includes the temperature, moisture, pressure and movements of the atmosphere, storms and other phenomena of the air. Much good work can be done with only such instruments as are found in the science laboratories, and such as may be constructed without difficulty for the purpose. But with a small outlay for instruments and books, results of greater scientific value can be secured. Some of the work which may be done with few or no instruments would be the keeping of records of rain and snow fall, tem-

perature, the direction, and approximately the rate of the wind, the quarter from which storms come. Rainfall records can be kept in an ordinary diary, or on a calendar. The letters "r" and "s" may stand for rain and snow, and any simple device may be adopted to show whether the storm was between 12 o'clock midnight and 12 o'clock noon, or between noon and midnight. The letter placed in front of a vertical line, thus, "r|," might be used to indicate rain before noon, and the letter placed after the vertical line to denote rain or snow after noon. A still more detailed record could be kept by putting with the letter the figure denoting the hour, thus, "rs8" would mean snow at 8 o'clock in the evening. For satisfactory results in measuring the quantity of rainfall, the rain gauge should be used, but an approximate estimate can be made by choosing a suitably exposed place and arranging a receiver for a vertical-walled vessel of sufficient depth to prevent the water splashing out. After the storm the depth of the water in the vessel will represent the rainfall. If the area of the top of the vessel in square centimeters is known, more accurate results can be secured by pouring the water into a tube graduated in cubic centimetres.

The directions from which storms come should be recorded, and it would soon be apparent to what particular winds we are chiefly indebted for our rainfall.

Very satisfactory temperature records can be kept with a very inexpensive thermometer. The readings should be made at the same hour or hours daily. An easily constructed weather vane will serve as a means of indicating the direction of the wind. Below the vane, but on the same support, a cross can be arranged to mark the cardinal points of the compass, and to facilitate the reading of the vane. The apparatus should be at a sufficient height to be unaffected by the presence of houses and other buildings. The following scale may be used for estimating the rate of the wind:—

- (1) Light, 2 to 5 miles per hour, moving leaves.
- (2) Moderate, 7 to 10 miles, moving branches.
- (3) Brisk, 18 to 20 miles, swaying branches, blowing up dust.
- (4) High, 27 to 30 miles, swaying trees, blowing up twigs.
- (5) Gale, 45 to 50 miles, breaking branches, loosening bricks, signs, &c.
- (6) Hurricane, 75 miles, destroying everything.

The History of Water.—The water which falls to the earth's surface as rain and snow is disposed of in three principal ways:

(1) A part enters the ground, becoming ground water. Of this ground water, a part issues again as springs and finds its way to the rivers and thence to the sea.

(2) A second part forms pools, rills, streams and reaches the drainage lines without passing beneath the surface of the earth. This is called the "run-off."

(3) A part is evaporated back to the atmosphere before it enters the ground or joins the run-off, but still more passes back to the atmosphere by evaporation from the surface layers of rock and soil which had absorbed it as ground water. Observe how this division of the water into these parts is affected by:—

- (1) The shape of the surface on which it falls.
 - (a) Loose sand, soil, clay.
 - (b) Broken or jointed rock.
 - (c) Unbroken bare rock of different kinds.
- (2) The rate at which the rain falls, and the duration of the storm.
- (3) The dryness of the surface upon which it falls.
- (4) The season, temperature, wind, &c.

Evaporation.—The study of the conditions affecting evaporation furnishes very interesting work, and can be carried on without any apparatus, though the thermometer and a hygrometer would be very useful. Observe the rate of evaporation as affected by:—

¹ From a paper entitled "The Home Field in the Study of Geography." By Prof. R. D. George, professor of geology in the University of Colorado. Published in "Investigations of the Department of Psychology and Education of the University of Colorado," June, 1905.

(1) The temperature of the air and of the surface from which evaporation is taking place.

(2) The movement and temperature of the wind.

(3) The moisture contained in the air (humidity).

(4) The slope of the surface and the exposure to the sun.

(5) The area exposed to evaporation.

Experiments may be made on various kinds of materials:—

(1) Put a measured gallon of pure water into a shallow vessel, and the same quantity into another vessel having one-half or one-third the surface area. Record the temperature of the water and the weight of the filled vessels, and expose them in the same place. After a number of hours or a couple of days, weigh the vessels and compare the loss by evaporation. If it is not convenient to conduct the experiment by weighing, the loss may be seen by measuring the water remaining, but this will necessitate pouring it out of the vessel used.

(2) Take two vessels of the same form and capacity, and of the same material, and put into each a weighed or measured quantity of water, say 10 pounds or one gallon, and see that the temperatures are the same. Add half-a-pound of common salt to one of the vessels, and stir it gently until the salt is dissolved. Expose them in a place favourable for evaporation and compare the loss of weight after a given number of hours. The effect of other salts and of greater proportions of common salt may be tested.

(3) Take equal volumes of fine sand, coarse sand, sand and clay mixed, and pure clay; dry them and place them in vessels of the same kind and form so that the materials are the same depth in all. Add to each a weighed or measured quantity of water and see that the water is uniformly distributed through the masses. Record the weight of each, and expose them in the same way, and compare the loss by evaporation after a certain time, and compare the depth of surface drying in the different materials.

(4) Make the same tests, but cover the vessels with thin white cloth, and again with thin black cloth. In each case expose them to direct sunshine.

(5) Take two vessels of the same kind and form and place in each the same quantity of fine sand moistened with the same amount of water. Cover one with black cloth and the other with white. Weigh them and place them in the sun, and after a given time compare the loss of weight by evaporation.

(6) Repeat any or all of these experiments under different weather conditions; for example, on a hot day and on a cool day; in a strong wind and protected from the wind; when the air is very dry and when it is filled with moisture.

(7) Experiment 3 may be varied by having two sets of vessels, and leaving the materials very loose in one set, and compacting them in the other.

Stream Study.—This should include the exploration, and if possible, the mapping of the basin of the stream, measurements and record of its flow from season to season, the character of its waters and the work they are doing. A drainage basin generally includes:—

(1) A permanent stream with permanent branches.

(2) Intermittent streams.

(3) Storm washes, gullies and ravines, which have streams only during and a short time after storms.

In a study of the drainage courses and the boundaries of the basin, answers should be sought for the following questions:—

(1) What conditions are necessary to information of a permanent stream?

(2) Why are some of the streams of this basin intermittent?

(3) What conditions have influenced the location and direction of the various tributaries of this basin?

(4) Is the size of the drainage basin fixed, increasing or decreasing? What are the causes of changes of area or drainage basins?

The stream basin includes all that area from which the waters would find natural drainage toward the stream. If the study of the river is too great an undertaking, a tributary can be chosen. Each branch watercourse should be traced headward to the divide which limits its drainage area, and if a reasonably good map can be found, showing section lines and other details, the position of the divide can be traced upon it. The direction of stormwater channels and washes can be added; the position of rapids and falls, terraces, bars and islands indicated. The shape of the channel can be shown, and the nature of the material in which it is formed may be indicated throughout its course.

In measuring the flow of the stream, choose a place where its course is straight for 50 or 100 feet, and where the banks and bottom are regular and the width is uniform. Set up two stakes 100 feet apart and as close as convenient to the water's edge. Toss a chip into the water a few yards above the upper stake and note exactly the second at which it passes each stake. The difference between the times at the two stakes will be the number of seconds required for the water to flow 100 feet. A number of tests should be made so as to find the rate in the middle and at points between the middle and the banks. If the tests are well distributed across the stream, the average of the results will be about the rate of the surface flow of the stream. Suppose that five tests give the following results in seconds: 9, 12, 11, 8 and 12. The average surface flow would be the sum of these divided by 5, that is 10 seconds for 100 feet, or 10 feet per second. As the rate at the bottom is less than the surface rate, it is usual to assume that the rate is nine-tenths its surface rate, which gives us 9 feet per second.

Various methods may be used to find the average depth. If the stream can be waded, it may be measured with a pole at regular intervals from bank to bank. If it is too deep for this method, a sounding line can be fastened to the end of a pole. The sinker should be heavy enough to carry the line to the bottom in spite of the current. There should be markers on the line, at intervals of three or four inches, to aid the eye in fixing the point to which the line sinks in the water. If tests are made at regular intervals from bank to bank, the average of the results will be the average depth of the stream.

The width can be measured by a cord or a tape line. If necessary, a cord can be got across by tying a pebble to it and throwing the pebble to someone on the opposite bank. It is customary to allow a small amount for the eddying and back flow close to the banks, but sometimes this is not necessary.

Having the rate per second in feet, the average depth in feet and the width in feet, the flow in cubic feet per second will be the product of the three numbers.

The energy of a stream is spent in doing various kinds of work. Some of the more apparent parts of this work are: the widening, deepening and lengthening of the valley; the removal of the materials loosened in this process; the building of bars, terraces, islands and deltas. Suitable sections of the valley may be chosen and mapped in detail. Cross sections and longitudinal sections of the valley and channel should be drawn to scale if possible. The positions of bars, islands, terraces and deltas should be indicated, and the distribution of mud, sand, gravel and boulder areas could be shown by means of different colours. The pebbles and boulders of the valley show the kinds of rock on which the stream is working, and their size, outline and surface tell something of the length of their journey. A more detailed study of the materials of the valley can be made by collecting pebbles and chips from the boulders and comparing and arranging them according to varieties, and if possible tracing each variety to its source higher up the stream. In this work, a more or less detailed geological map of the valley can be made.

The waters may be examined for suspended solid matter and for matter in solution. The amount of matter carried in the solid form may be estimated in various ways. A measured quantity of the water may be evaporated and the solid matter left in the vessel may be weighed. Or, a carefully measured gallon or two of the water can be weighed accurately, and its weight compared with that of the same measure of clear water. The difference between the weights will be the weight of the suspended matter less the weight of the water displaced by it. If we call the weight of stream water 4.0, the weight of the solid matter carried by the stream would be about 2.5, and 2.5 pounds of solid matter would weigh only 1.5 pounds in water. And in order to find the weight of the solid matter in the water, we must multiply the difference between the weight of the stream water and that of the clear water by $\frac{2.5}{1.5}$ or $\frac{5}{3}$. Thus, if the difference between the two weights were 3 pounds, the weight of the solid matter would be 3 pounds multiplied by $\frac{5}{3}$, or 5 pounds. If the flow of the stream is known, a calculation can be made showing the amount of suspended matter being carried by the stream at the time the test is made.

An interesting experiment on muddy waters may be made by taking three glasses of the water and pouring into one a teaspoonful of salt, and into another a teaspoonful of powdered alum, and stirring them until the salt and alum are dissolved. Stand the three glasses where they will not be disturbed, and note the difference in the times required for the water in the glasses to become clear.

To test whether the stream is carrying matter in solution, take a measured quart of the water from the stream when it is clear, and evaporate it by slow boiling, and note the amount and character of the deposit, if any, formed in the vessel. Test the deposit with acid. Effervescence indicates carbonates, probably of lime.

The Formation of Soil.—The decay of rocks and the formation of residual clay and soil may be studied almost anywhere in the foothills and mountains, and at many places on the plains, especially along stream gorges and valleys. In the mountains select a rather level area in such a position that the decaying rock would not be readily carried away by wind and rain, and where it would not be greatly added to by matter washed or rolled in from the surrounding rocks. If the spot is covered with grass, it will be found that the soil at the roots of the grass will be more or less darkened, possibly almost black, from the presence of decaying plant matter. Deeper, it is lighter coloured, coarser and more gritty, and gradually passes into rusty, angular, pebbly or coarsely granular material. Still deeper the proportion of fine material becomes less and less, and blocks of partially decayed rock appear and finally the solid rock is exposed. A very interesting collection may be made showing the various stages in soil formation, from fresh rock to soil-supporting vegetation.

On the plains it is possible to find places where the streams have cut down into the rocks and have left them exposed. In such places one may sometimes trace the change from a solid rock below, to a more and more broken and decayed mass, and finally upward into clay soil.

Briefly stated, the process of soil-formation is as follows: most rocks are made up of grains of two or more minerals, and the minerals themselves are made up of simpler substances called elements. Water, the gases of the atmosphere and the substances formed by the decay of plants, all tend to unite with these elements and form new compounds, many of which are easily soluble and are partly or completely washed away to the rivers and carried to the sea. Others are less soluble and remain longer, and still others are almost insoluble. These last are the principal soil-formers, but with them, especially in

dry regions, small quantities of the soluble salts remain. This soil material may accumulate and form a thick covering over the rock from which it is formed, or it may be carried away by wind and water and laid down elsewhere. Much of the mud of stream channels is fine soil material which has been washed down into the valleys and is being carried away to the sea. If the rock is seamed and jointed, air and water get at it more easily and the work of decay goes on faster. Freezing and thawing and other changes of temperature cause fine fracturing, and so hasten decay.

Plant and Animal Geography.—The study of the distribution and habits of plants and animals is one of the most interesting kinds of field work, and while a knowledge of species and varieties is very helpful, much instructive work can be done without it, especially if it is possible to secure the co-operation of the teacher of biology. The following outline is intended only to indicate some lines of work. It may appear to trespass on the field of biology, but in a broad sense biology is the story of geography told in the language of life. An intelligent understanding of either science necessitates a careful study of the response of organisms to environment and the effect of environment upon organisms.

A. Plant Classes: (1) Trees and shrubs. (a) Leaf trees. (b) Needle trees, trees with needle-like leaves. (2) Herbaceous plants.

B. Regional Distribution: (1) Mountains. (a) Alpine—above timber-line. (b) Sub-alpine—9,500 to 11,000 feet above sea level. (c) Lower slopes, from the plains up to 9,500 feet. (d) Mountain, meadows and parks. (2) *Foothills and Plains:* (a) Canyons. (b) Hill-sides and mesas. (c) Open plains.

C. Distribution relative to Exposure to Sun and Wind: (1) Vegetation on various slopes. (2) Height of timber-line and its relation to sun, wind and movement of atmospheric moisture. (3) Effects of shade on the holding of moisture and on plant distribution. (4) Wind timber.

D. Influence of Man: (1) Effects of cultivation of the soil. (a) Introduction of new plants. (b) Disappearance of certain plants. (2) Effects of irrigation. (3) Effects of railway and highway building. (a) Introduction of new plants by migration along railway and highway. (b) Vegetation of new cuts and fills. (4) Effects of removal of timber trees on: (a) Other trees and shrubs. (b) Herbaceous plants.

E. Relation of Vegetation to Soils: (1) Vegetation of sand and very sandy soil. (2) Vegetation of residual clay. (3) Of loam, alluvium and vegetable mould. (4) Of boulders and bare rocks (mosses, lichens, &c.).

F. Relation of Vegetation to the amount of Moisture: (1) Stream border, swamp, bog and meadow types. (2) Plain types.

G. Seasonal Progress and Development: (1) Effects of slope, shade, altitude, &c. (2) Spring flowering plants, summer flowering plants, &c.

H. Relation of Vegetation to Underlying Rocks.

I. Plant Geography: One plant map of the vicinity might show by different colours the distribution of needle-trees (conifers), leaf-trees and shrubs. A second could show the distribution of herbaceous plants. Different localities would show more or less definite groupings.

Animal Life: The principal groups are: (1) Mammals. (The group includes all hairy quadrupeds.) (2) Birds. (3) Reptiles. (The group includes snakes, turtles, the horned toad, Gila monster, &c.) (4) Amphibians. (The group includes frogs, water-dogs (salamanders), &c.) (5) Fish. (6) Worms. (7) Molluscs. (The group includes snails, oysters, &c.) (8) Arthropods. (The group includes crustaceans, centipedes, insects, spiders, &c.)

How is the Distribution of each Group Influenced by: (a)

The presence or absence of timber? (b) The supply of moisture? (c) The topography—plains, foothills and canyons, mountains? (d) The nearness and work of man?

Each of the Groups may be Studied under the General Headings: (a) Range, migration, both local and distant. (b) Summer life. (c) Winter habits, colour changes, &c. (d) Stages in life development. (e) Food and supply.

EDUCATION IN SCOTLAND.

THE Report of the Committee of Council on Education in Scotland for the year 1904-5 has just been issued as a bulky volume of over 1,100 pages. It is of special interest as being the first sent forth under the signature of Mr. J. Struthers, Secretary to the Scotch Education Department. Mr. Struthers has not inaugurated his term of office by almost wholly recasting the form of the Education Blue Book, as Mr. Morant did when he took the reins at the English Board of Education; but in regard to fulness of treatment and interest of material he has produced a volume that should be indispensable to the educational expert and instructive and interesting to the general reader. Only a few of its leading features can here be noted, but it is hoped these will direct many to a careful study of the original.

SCHOOL ATTENDANCE.

With the present estimated population there might be 924,262 on the registers, and 770,209 in average daily attendance. The returns, however, only show 793,492 children on the registers, with 682,269 in average attendance. This means that for every 100 children who might be on the roll, and for whom ample provision has been made by the School Board authorities, there are only eighty-six scholars on the registers and seventy-four in daily attendance. After making due allowance for the many valid reasons that may account for a diminished roll and attendance, there can be no doubt that the apathy of parents and the laxness of managers, together with the costly and cumbersome method of prosecution, are the primary factors in this regrettable result. Mr. Scougal, H.M. Senior Chief Inspector of Schools, in his report on the Western Division, makes an exhaustive analysis of the attendance problem in the area of the School Board of Glasgow. In this district alone there were 13,573 children of school age not on the roll of any school. This leakage he accounts for very largely by the failure of the Board to insist on the attendance of pupils under six years of age. These children, it is contended, were getting harm by not being at school. They were losing the pliancy of childhood; they were acquiring undisciplined habits which would bear fruit in truancy and inattention, and they were living in physical conditions worse than those of a good infant school. But a further consequence of this late enrolment was that a large percentage of the pupils failed to reach a satisfactory standard of attainment on leaving school at fourteen years of age. Taking the qualifying examination as such a standard, it is shown that about 11 per cent. should qualify each year, or, making a liberal allowance for unavoidable leakage, the numbers passing should at least reach 8 per cent. As a matter of fact, in Glasgow district it was found (i) that only 3 per cent. of the total enrolment passed through the gate of the qualifying examination; (ii) that at the beginning of the session the pupils on the roll of supplementary classes and higher grade schools constitute only about $4\frac{1}{2}$ per cent. of the total enrolment; and (iii) that towards the close of the session these pupils would be rather less than 3 per cent. of

the total school roll. These figures (which are almost identical with those brought out by Prof. Sadler in his investigation into the state of secondary education in Liverpool) reveal a state of matters that calls for serious inquiry. "The fault may lie in the region of instruction and promotion (for which class-teachers and headmasters are answerable) or in the region of enrolment and attendance (which belongs to the managers). The facts collected this year by a Committee of the Educational Institute leave the impression that it is not the teachers who are to blame."

ORDINARY SCHOOL WORK.

The keynote of all the reports on the ordinary branches of instruction is one of hope and promise for the future. Teachers are striving after higher ideals and better methods, while in respect of staffing and equipment managers are doing their best to secure thorough efficiency. Dr. Dunn, however, strikes in his report a note of warning that calls for the careful consideration of the Department and its officers. "Of late years there has been a considerable expansion of the school curriculum. Nature knowledge, history, and drawing are now practically obligatory, and a vast amount of work devolves upon the teacher, who is often inadequately assisted in his work. In these circumstances it is absolutely essential that teachers should establish for themselves a principle of educational perspective in which reading, writing, and arithmetic should always occupy the foreground. No amount of extraneous knowledge can compensate the lack of proficiency in these subjects, and recent experience suggests to me that they are to some extent suffering from the accumulation of requirements." Careful observers both within and without the teaching profession have long ago come to the same conclusion, and to these the outspoken comments of Dr. Dunn will be peculiarly welcome, as there is a general tendency in the official mind to hold that "whatever is, is best."

The detailed criticism of the elementary subjects centres mainly round arithmetic and composition. This is due to the fact that for some time it has been felt that a radical change was necessary in the teaching of these important subjects. It is now universally recognised that all arithmetical sums or problems can be solved, and usually are solved, by more or less broad applications of the elementary rules; and that composition should be taught in some form from the infant school to the supplementary classes.

ARITHMETIC.

On this subject Mr. Smith has some very apposite and suggestive comments. "The two points at which our experience shows that reform is most urgently needed are: (i) in the junior division a closer connection between mental and written arithmetic; (ii) in the senior division an earlier start in and a more concrete treatment of decimals. Under the old Code, decimals were scarcely touched till the last year of school life, and they were then habitually approached through vulgar fractions, with the result that pupils never learned to use decimals with confidence as a means of getting out an answer." For the acquisition of a working familiarity with decimals Mr. Smith advises both an earlier introduction of the decimal system and a more frequent application of it in concrete problems, and he suggests that the metric table of length should be taught concurrently with the British table, and that pupils should be set without comment to reduction, etc., therein, when they would soon find out for themselves that the French method converted all compound rules into simple rules, and that reduction was nothing but a change of name.

COMPOSITION.

In regard to this subject we have a remarkable conflict of opinion. From the Southern and Western Divisions comes the cry that "Composition is the weakest subject in the school. The feeble powers of expression, both oral and written, exhibited by the pupils in some schools is, to say the least, disappointing." From the Northern Division, we are told, "No subject shows more encouraging signs than composition. From the lowest classes upwards it is now almost the universal habit to train scholars to express themselves in the oral examination more fully, and with some sense of initiative, and the consequent gain to written composition is very obvious." But, after all, this divergence of opinion is more apparent than real—the one view judging from the standpoint of *what might be*, and the other from that of *what has been*. It is much more important to find that there is general agreement as to the steps that should be adopted to raise this branch of instruction to a level commensurate with its importance. It is recommended that oral composition should receive constant and systematic attention throughout the whole school course, and that at a stage not later than the lowest class of the senior division a beginning should be made in written composition. Oral composition does even now receive more or less attention in nearly all schools, but in too many cases it is treated entirely *per se*, so many minutes a day being devoted to a formal lesson on "oral composition." But training in oral composition should really be going on constantly in school. Every lesson should supply material that can be utilised for this purpose, and every lesson should tend to greater facility in the use of the mother tongue.

SUPPLEMENTARY COURSES.

The institution of these courses led at the time to a good deal of misapprehension and to no little feeling in many parts of the country, where they were regarded as a covert attack on the traditional literary character of public-school education. There can be no doubt that a rigid interpretation of the Minute establishing them justified much of the indignation which was aroused. But with the general aims of these courses as here expounded no fault whatever can be found. Teachers are still left free to give the literary education to those likely to profit by it, but for the great mass of the pupils a more practical education is provided, and one which is likely to have a more direct bearing on their future life.

"The course is essentially no more than a natural continuation and development of the scholar's previous studies. Its aim is not so much to give the pupils new knowledge as to consolidate and make living their already acquired knowledge. To secure this it seeks to import a special zest and effectiveness into the work of these pupils by making them realise that that work is in close touch with the interests and the claims of their daily life: by at once tempting, and guiding, and training them to wish to learn, and to learn for themselves; and by instilling into them something at least of a love of learning and of literature that will be to them, after they leave school, not only a help amid life's toil and struggle, but also a never-failing source of rational enjoyment and pure delights in their hours of leisure."

Seldom have the aims of a school system been framed with nobler ideals or couched in more eloquent phrase. If these courses succeed in any measure in fulfilling the expectations and desires of their framers, many hereafter "will arise and call them blessed."

The curriculum, as indicated above, endeavours to maintain a due balance between literary and practical subjects. The morning is given to bookwork, the afternoon to practical work. Out of a twenty-five hours' week, about fifteen hours are given to bookwork and physical exercises, and ten to subjects such

as cookery, manual work, dressmaking, household economy, and practical science.

As to the work done in these courses, the actual record of work by a pupil in a typical course may here be outlined, more as an awful example of what should *not* be done than as an example to be followed, though it is seriously given with the latter purpose in the report. "In seven months this girl read, and the teacher revised with the class in school, 'The Talisman,' 'Enoch Arden,' 'Evangeline,' 'The Merchant of Venice,' 'A Christmas Carol,' 'Rab and his Friends,' and 'The Abbot.' The pupil made an elaborate *précis* of these books, the summary of a single lesson sometimes occupying a whole page of her record-book. She studied and learned by heart 'Yarrow Revisited,' 'God's Acre,' portions of 'Evangeline,' 'The Day is Done,' 'The Legend Beautiful,' 'A Psalm of Life,' 'The Brook,' and the 'Ode on the Death of the Duke of Wellington.' She also read for herself ten books from the school library. On alternate weeks she prepared and wrote essays, generally on subjects drawn from her reading. She had a course of lessons on the history of India and the Colonies, of which she made full notes; and a similar course on citizenship, advancing from such subjects as 'Co-operative Stores' to 'Municipal Government,' 'Taxation,' and 'Parliamentary Government.' She worked regularly through the higher rules of arithmetic, giving special attention to decimals and the metric system. A short course in hygiene was followed by a course of twelve lessons on sick-nursing given by a doctor. These serious studies were relieved by an ample allowance of music and physical exercises—with most beneficial effect on the girl's growth and carriage."

To all which one can only say, "Prodigious!" and repeat the query put to Southey by his Quaker friend, "But, friend Southey, when dost thee think?"

EDUCATIONAL ORGANISATION.

The present Blue Book contains "A Selection of Circular Letters of the Scotch Education Department, 1898-1904, with Explanatory Memorandum." The object in so doing is to gather together the principal circulars of the Department in a form easy for reference, and to accompany them with such explanations as would enable those not conversant with technical details to understand the general policy pursued. The selected documents are not merely incidental to the ordinary routine of administration, but represent the various stages in the great educational reforms of Lord Balfour and Sir Henry Craik. The policy and aims of the Department are here clearly and fully disclosed, and the documents constitute a remarkable record of educational progress without legislative initiative. The general principles underlying the policy of the Department may be summed up as follows: (i) They contemplate three distinct grades of day schools, each with a well-balanced curriculum of general education, essentially but not exclusively humanistic, and ending in each type with a period of consolidation and concentration on the subjects essential to that type. Specialisation, implying, as it does, a practical acquaintance with some related occupation, should be relegated to the continuation class system. (ii) In subsidising education in whatever form, the Department have had regard to the characteristic principle of dual control. Having satisfied themselves as to the general efficiency of a school and the adequacy of the local contribution, they desire to leave its internal economy to the teachers and managers themselves, unhampered by considerations of pecuniary results. (iii) They propose to test the efficiency of schools not by written examinations or prescribed syllabuses, but by repeated visits of inspection. In examinations which are intended to test the merit of individual candidates, the teacher's opinion of his own pupils receives the fullest consideration.

TECHNICAL EDUCATION FOR ENGLISH IMMIGRANTS IN THE COLONIES.

WE have received from Sir Philip Magnus a copy of a letter sent to him by Mr. Hubert Reade, dealing with a subject of great importance to educated Englishmen who emigrate to one or other of our colonies.

Mr. Reade, who is a prominent Colonial, has given great attention to the question of technical education for English immigrants and has advocated his scheme both at the Colonial Institute and in the *Empire Review*. We gladly reprint his letter to Sir Philip Magnus with a view to assist in directing the attention of educational authorities in the colonies to what is likely to prove a valuable development of educational enterprise. Probably the references to the Headmasters' Conference should also include the Headmasters' Association.

May I submit to you some suggestions as to the means of affording educated English immigrants opportunities for receiving technical education in our Colonies?

As the Colonial Conference meets in 1906, I would call your attention to the question:

How can Englishmen, who have received an advanced education and wish to settle in our Colonies, be admitted to their Universities and Technical Colleges for the purpose of receiving technical training under local conditions?

I would suggest that the University of London and Headmasters' Conference might unite in asking the Secretary of State for the Colonies to place this question on the Agenda Paper of the Conference.

A precedent is afforded by the educational conference held at the request of the University of Oxford in connection with the Conference of 1902.

Subsequently the Colonial Office circulated in all our Colonies a Memorandum, drawn up by the University of Oxford, giving all information relating to it which might be of use to colonial students desiring admission.

Mr. Secretary Lyttelton promised, in answer to Sir James Rankin, that the Colonial Office would circulate such memoranda on behalf of any Colonial University or Technical School whose authorities applied to him to take action.

Could not the Colonial Office circulate this answer (at the request of the University of London) amongst all officers administering the Government of Colonies, and embody the information thus obtained in an *Imperial Universities Gazette* issued at regular intervals?

A summary of such information could be given in the Calendars issued by English Universities, Public and Technical Schools.

Further, it would be well if the University of London and Headmasters' Conference could draw up a scheme for the admission of candidates from England, who had passed an examination held in England, to any Colonial University or Technical School, for submission to the Colonial Conference.

Matriculated students of any British University are, as a rule, admitted to any Colonial University or Technical School without further examination. An exception exists in the case of the Engineering Faculty of the McGill University of Montreal, which may require a supplementary examination in mathematics.

Such provision is not made for other English students.

I would suggest that such students should be eligible for admission to any Colonial institution granting degrees or diplomas recognised by the Government of the Colony on the production of certificates attested by the representative of the Colony in London (under the "Rules Governing the Issue of Foreign Office Passports").

(1) That they held the "Testamur" of a recognised qualifying examination.

(2) Certificates of moral character in the form required by the Civil Service Commissioners.

These qualifying examinations might, in the absence of a general final examination, include:

(a) The Senior Local University Examinations.

(b) The College of Preceptors Examination.

(c) The Board of Education, and other examinations of a similar calibre.

The standard of qualification should include say four *ordinary certificates* (taking the Oxford Senior Local Examination as an example) in such subjects as:

(a) English, including history and general geography.

(b) One foreign language (translation, composition, grammar, or Latin.

(c) Science. (The Committee should determine the qualifying subjects under this head.)

(d) Mathematics.

A scheme might also be drawn up for the admission of the undergraduates of any British University or admitted students of any Higher Technical School *ad eundem*, to be determined by the applicant's standing in England (*i.e.*, according to examinations passed, number of terms kept, &c.).

Any institution accepting any of these schemes would be free to withdraw its acceptance after a certain interval on due notification to the Secretary of State for the Colonies.

Every institution would be at liberty to determine:

(a) The age limit of students admitted under such a scheme;

(b) If it should apply to both sexes.

It would be very desirable that Colonial Universities and Technical Institutions should afford facilities to students from England, who were not desirous of taking their full degree or diploma course, to attend classes in which certificates could be gained after examination. These certificates could be granted on the results of the ordinary terminal examinations. A somewhat similar plan is being considered at the Transvaal Institute, and is in force at Cirencester, R.A.C.

Admission to such classes might be obtained on the production of a certificate signed by the Agent for the Colony in London.

Such certificates might be granted to persons producing an attested certificate of fitness for admission signed by the principal of the institution in which they had received their education.

A report as to the working of the scheme (if adopted) might be submitted by the Colonial Office to the Colonial Conference in 1910.

This scheme includes the students of all higher Agricultural Colleges in England. The case of those from our Normal Training Colleges for Teachers also requires consideration.

SECONDARY EDUCATION IN AUSTRALIA.

THE advantages arising from the spread of higher education are keenly appreciated in all parts of the Australian Commonwealth, and no objection has been raised against any necessary public expenditure, however large, in this direction. For many years secondary education was confined principally to private schools and existing universities, but at the present time it enters considerably into the various State systems, principally in the shape of high schools, from which the transition to university teaching is easy.

In New South Wales, apart from numerous private colleges, there are four State high schools, two for boys and two for girls; also 129 "superior" schools, in the higher classes of

which the pupils are prepared for public examinations. The annual expenditure on the four high schools in 1903 was £6,580. In connection with the examinations there is a system of scholarships for the Sydney Grammar School, High and Superior Schools, and the Sydney University, the number of successful competitors in 1903 being 107.

In Victoria there are 80 State scholarships, each tenable for three years, 40 being open to State school pupils, and 40 to pupils of State or other schools, to enable them to proceed to a degree or diploma in mining or agriculture at the Melbourne University.

In Queensland attempts are being made to bring the system of secondary education into line with that in New South Wales, the way already being prepared by a liberal endowment of existing private grammar-schools, and by a system of scholarships for these schools, which at present number ten. Each school is subsidised to the extent of £1,000 annually; and the total amount of endowments and grants by the State to these institutions to the end of 1903 was £273,035.

In South Australia the Advanced School for Girls was attended by 113 pupils in 1903. The fees amounted to £853, to which should be added an allowance of £506 on account of bursary holders, while the expenditure was £1,228. There are twelve bursaries for this school annually awarded to State school pupils. Six university scholarships of the value of £35 each are annually awarded to day students on the recommendation of the University Council, and 18 other scholarships of £10 each are awarded to evening students. The work of secondary education for boys is carried on principally in private establishments.

In Western Australia there is a high school for boys at Perth, which in 1902 received Government aid to the extent of £1,000. Two State scholarships for this school, valued at £75 each and tenable for three years, are awarded annually. The Government also offers annually ten bursaries of the value of £10 each to children attending the elementary schools of the State—five to boys, and five to girls.

In Tasmania a system of exhibitions was at one time in force, but none have been granted since 1893. There are, however, 21 grammar schools, in each of which the teaching is of a high character.

VARIETY AND INDIVIDUALITY OF SCHOOLS.¹

It is assumed that variety and individuality are good things, and that uniformity is to be avoided as the sure sign of manufactured articles. This does not mean that schools are to be free from control; that in order to secure life and growth they are to be left like neglected gardens, in a condition of unpruned luxuriance, and in that state to produce more weeds than fruit. But it does mean that, while guarantees are taken for orderly work being done, schools are most likely to be living agencies, and to be of the greatest service to the community, if they are allowed to vary in all their arrangements—in their fees, their time-tables, the subjects taught, and the weight attached to various subjects—in accordance with the varying localities in which they may be found. It is further assumed that schools under the control of the same local authority are in some danger of finding it difficult to maintain their individual traditions and characteristics. It is *not* assumed that this danger will arise from any desire on the part of the local authority to obliterate such distinctions, but because the regulations adopted by it may

tend inevitably in that direction. They may have a deadening effect. The question is how to avoid this danger.

The solution of this question seems to me likely to be found in a clear appreciation of the different functions of the central authority and the local authority. Some have maintained that there is no need for a local authority at all, that secondary education should be an imperial charge, and should be administered by an imperial body. But reflection shows that a central authority suffers from obvious limitations, that its local knowledge is slight, that it cannot take account of the varying needs of localities, that it must confine itself to the issue of general regulations and to payments made on an unvarying scale. The limitations of the central authority at once suggest the functions of the local authority. Its business is to do just what the central authority cannot do—to take account of the varying character of localities, to do what is needed for the efficiency of one school without any implied necessity of doing the same thing for the next school; rather, indeed, with the expectation of requiring to do something different for the next school. If this view is even approximately correct, it will be seen how mistaken would be the action of a local authority which should simply accept the classification of the central authority, and by its grants almost confine itself to supplementing the grants of the central authority. To follow such a plan is simple, and after a little experience would become almost a matter of office routine. But to do so would be to abandon the very duties that we expect it to discharge.

To discharge these duties will mean something very different. It will mean from time to time the careful consideration of the circumstances of individual schools, the careful consideration of their difficulties and of their successes; of how best to remove the former and to promote the latter. A local authority desiring to act efficiently will not begin its work by the adoption of a large and detailed body of regulations which will only serve to limit its own discretion. No doubt it will promulgate some regulations; but, bearing in mind that its main reason for existence is that it should take account of local differences, it will take care that its regulations are not of such a kind as to hamper its own usefulness, or to reduce the schools in its care to a dull level of uniformity. These remarks are general, and it may be helpful to outline shortly what would be a satisfactory way of aiding schools. The local authority would first determine what type of secondary school is wanted for any particular locality. There would be the kind of school with a leaving age of 18 or 19, from which every year there would be boys proceeding to the Universities; the school with a leaving age of 16 or 17, from which only an occasional boy would enter a University; and, perhaps, schools with a still lower leaving age, from which boys would never go to a higher place of learning. The cost of education per head in each of these different types would be determined as accurately as possible. The fees to be charged would be arranged, and the grant from the central authority estimated. It would then be clear what subvention from the local authority would be needed, and the grant per head that might be looked for could be announced to the school. This grant, it seems to me, should be the same for all schools of the same type. An alternative suggestion is that, instead of announcing beforehand the grant to be expected, the local authority should simply make good any deficit. This suggestion does not commend itself on reflection. For, firstly, on this plan there would be no incentive to economical management, and much money might be wasted, and yet not in such a manner as the local authority could easily check. Secondly, there would always be pressure from the schools to be allowed to lower their fees; for under this plan to lower fees would mean an increase of pupils without any loss of income per head.

¹ From a paper read by Mr. Philip Wood at a Conference on Secondary Education held in July, 1905, in Durham.

Thirdly, the school with somewhat higher fees than its neighbour would reap no advantage from the willingness of the parents in its locality to make greater sacrifices than others for the education of their children. Fourthly, the school with some endowment would reap no advantage from that endowment, and the intention of the pious founder to confer some special benefit on his fellow-townsmen would be rendered inoperative. These seem to be serious drawbacks, and they have been drawn out in detail, for this plan of aiding schools has met with much favour in various quarters. The plan suggested in this paper of fixing in advance the grant per head to be expected, and the same grant per head for the same type of school, avoids each of these drawbacks. Under it there would be no temptation to carelessness in expenditure; no temptation to charge lower and lower fees; the children in the school charging a higher fee than its neighbours would, other things being equal, derive the legitimate advantage of their higher fee; and the school with some endowment would be able either to charge a lower fee than the school with none, or to provide better playing grounds or library, or other advantage of the nature of an educational luxury. Lastly, the pious benefactor might still be found amongst us, instead of being merely commemorated in school legends. So much for the manner of giving aid. And only annual aid has been spoken of for the building or extension of schools. Though of much importance, it does not affect the actual working of a school, except in so far as the work has been well or ill done.

HISTORY AND CURRENT EVENTS.

THE war between Russia and Japan is over. The Treaty of Portsmouth is signed, and will in all probability be ratified. Where is Portsmouth, and why was the treaty made there? Ask these questions in relation to Columbus's voyage of 1492. Try to explain to him that Muscovy and Cipango have been fighting, and that a ruler of territory in the world on a little part of which he stumbled is interested enough in the fighting to wish to bring it to an end. Think of the changes that one would have to tell him of, that neither Spain in whose service he sailed, nor France, whose explorers continued his work, but that England who rejected his offer is the mother country of the land whose ruler brought about the treaty. Note also how differently the negotiations have been carried on from anything that has gone before. The electric telegraph has revolutionised methods of diplomacy, and "plenipotentiaries" are scarcely possible. The statesmen who met were but the mouthpieces of the sovereigns and their ministers at St. Petersburg and Tokio, and that is why the ratifications will be all but certain, not mere possibilities, as they used to be in the days of slow communication.

PRESIDENT ROOSEVELT said: "If the existing law proves inadequate, defiance of the law must invariably lead to further legislation. I believe that all corporations engaged in interstate commerce should be under the supervision of the National Government." "States," in the mouth of President Roosevelt, means of course the forty-five constituent parts of the United States of America, each of which has far more power than an English county, but not so much as a European "state," such as Portugal or Holland. And the "national" government means, equally of course, the government of the federation which we call officially the United States of America, and popularly "America." But note the principles underlying the President's saying. Government is almighty. There is no doubt about its power. If present laws are inefficient, other laws can

be made which will be efficient. In the fight between the individual and government, the latter must win, however individuals may combine. Is this true? And commerce between States must be regulated by a government common to all the States. How will this apply to Europe? Will the "Roman Empire" ever be revived to rule the nations for the sake of regulating international commerce? Or is the tendency just now quite the other way, of mutual exclusion and exclusiveness?

"THE Appropriation Bill was introduced, and read the first time amid cheers." So runs a clause in the report of parliamentary proceedings for Thursday, August 3rd last. Were the members of the House of Commons, then, specially interested in this Bill? Was it some new legislative measure embodying principles for which a section of the community had long struggled and were now on the eve of seeing established? On the contrary, it might have been dismissed in the newspaper report under the phrase, "routine business was despatched." The Appropriation Bill is an annual, like the Army Bill which has taken the place of the Mutiny Bills of former years, or the Expiring Laws Continuance Bill which formally continues in existence for another year those laws which Parliament has seen fit to make only "temporary." Why did cheering accompany its first reading? Because that event foreshadows the close of the session, and members of the House of Commons are like schoolboys and count the days to the holidays. To explain why this Bill is always deferred to the end of the session, and what might happen if it were not thus deferred, would be to write the constitutional history of this country since the seventeenth century.

Do our readers know the *Almanach de Gotha*? It is an annual publication now in its 142nd year. It is printed in French in the middle of Germany, and its special feature is a full account of all the reigning families of Europe, of those that have reigned, of many noble families, and of the diplomatic service. Every living person (and many others) who belongs to these circles is mentioned. We have lately come into possession of the edition of 1864, and it has been interesting to compare it with that of the current year. Then there was no German Empire, and Napoleon III. was reigning in France. Hanover was still a sovereign state and there was a king of the Two Sicilies. The Papal States were important enough to justify a list of the Cardinals as well as a mention of the Pope. We possess a coin of that year issued by the Emperor of Austria as a member of the Germanic Confederation. Forty years have made much change in Europe. Yet there are still reigning houses of whom the ordinary British reader scarcely hears. Where are (*e.g.*) the principalities of Schwarzburg-Sondershausen, Schwarzburg-Rudolstadt, Waldeck, Reuss Aelterer Linie, Reuss Jüngerer Linie, Schaumburg-Lippe and Lippe, each of which sends a member to the Bundesrath and the Reichstag of the German Empire?

A CORRESPONDENT takes exception to our remarks of last month on the case of Mr. Findlater. We regret that our note should unwittingly, and *a fortiori* unwillingly, have given offence to some of our Wesleyan readers. We did *not* think the case was one of heretical opinions, much less of "handing over to the secular arm," our parallel being confined to the difference between a community and a member thereof.

We have received from Messrs. J. J. Griffin and Sons, Ltd., Sardinia Street, Lincoln's Inn Fields, London, W.C., a well illustrated and conveniently arranged list of "Thermometers and Pyrometers for measuring temperatures from -200°C. to 4,000°C."

ITEMS OF INTEREST.

GENERAL.

At the autumn general meeting of the Association of Assistant-masters in Secondary Schools, held at Liverpool on September 9th, a resolution was unanimously adopted as follows:—"That this association heartily supports the suggestion made by Prof. M. E. Sadler in his report upon secondary education in Hampshire, to the effect that joint action is desirable on the part of county and county borough authorities with regard to a salary scale for teachers in secondary schools. It respectfully urges the education authorities of the areas inspected by Mr. Sadler to communicate with each other with a view of adopting this suggestion, and submits that the lead so given would be of invaluable service to the secondary education of the country." A series of resolutions were also passed by the council of the association at a meeting on the previous day. In regard to salaries, it was decided that governing bodies should regard the augmentation of salaries, where these were unduly low, as the first and most necessary charge upon grants received from education authorities.

RESOLUTIONS were also passed on the Regulations for Secondary Schools, 1905-6, issued by the Board of Education: (i) That this meeting, believing that the improvement of secondary schools is, at the present time, the most important educational task that lies before the nation, highly approves of the policy of the Board of Education in diverting the funds hitherto used for providing scholarships, to increase the aid given to the schools, and in discouraging local authorities from undertaking large scholarship schemes before secondary schools are put into a condition of thorough efficiency and financial stability. (ii) That this meeting approves of the policy of the Board of Education in maintaining the desirability, in ordinary circumstances, of the payment of fees in secondary schools. (iii) That this meeting is in full agreement with the policy of the Board of Education in concentrating its financial assistance, in present circumstances, on the four years' course, but, at the same time, it trusts that the Board will spare no effort to obtain such additional funds from Parliament as will enable it to extend pecuniary aid to (1) preparatory departments, (2) scholars who have completed the four years' course. (iv) That this meeting expresses its satisfaction with the policy of the Board in making its financial aid dependent on a sufficient number of scholars taking the four years course. (v) That this meeting welcomes the greater liberty given by the Regulations for 1905-6 to schools in framing their time tables. (vi) That this meeting regards with especial satisfaction the arrangement by which schools will be able to earn a higher grant for a special curriculum of a predominantly literary and linguistic type in the last two years of the course. (vii) That inasmuch as it is desirable to encourage the utmost possible diversity of type in the curricula of secondary schools, equal encouragement should be given to the teaching of (a) Latin and one modern language, (b) two modern languages, (c) in schools with scientific curriculum, one modern language. A further resolution on the subject of Latin, to the effect that the meeting deprecated the importance attached to Latin by the secondary school regulations, was after considerable discussion rejected by 20 votes to 7.

THE Trades Union Congress passed the following resolutions at its meeting last month: (1) all grades of education to be free and State-maintained; (2) attendance in primary and secondary schools to be compulsory; (3) provision to be made for the continued education of capable students through the university courses; (4) the standard of capacity to be judged by work previously accomplished, and not by competitive examination;

(5) education in all State-supported schools to be secular; (6) all State-aided schools to be under popular control; (7) training colleges for pupil teachers to be maintained by each educational district; (8) cost of education to be borne by the national exchequer out of revenue obtained by broadening the basis of taxation and by the restoration and democratic administration of valuable misappropriated educational charities and endowments; (9) the Parliamentary Committee to formulate these proposals in a Bill to be laid before Parliament next session; (10) no parliamentary candidate to receive the endorsement of the Parliamentary Committee unless he is prepared to accept and promote the educational policy of the Trades Union Congress.

AT Schneidemühl in Posen, a dispute has arisen on account of the abolition of the *Vorschule*, which prepared boys for the *Gymnasium*. The school authorities of the town decided that the boys who would have joined the *Vorschule* should in future attend the lower classes of the Girls' High School. The director of the *Gymnasium* wished them to attend the *Volksschule*, and in this recommendation he was supported by a majority of the parents. A private school was opened for the minority, and on its collapse the six pupils were transferred to the Girls' High School. The small number of enrolments in the supplementary classes of the latter school would indicate that the better classes of the town do not object to their children passing through the *Volksschule*. A hope is generally expressed that in Posen, as in Bavaria and Westphalia, the *Vorschule* will soon be a thing of the past. The *Volksschule* will then gain in social prestige, and the pupils of the higher schools will benefit, for neither in principle nor in practice can the experiment of making a girls' school serve as a preparatory school for boys find any justification.

A NEW departure in school organisation is being made to a limited extent in Germany. It is proposed to combine the teaching of applied mathematics and physics in the upper classes of the *gymnasien*, and to cultivate to a less extent the study of special methods of calculation and manipulation. When this object has been reached it is hoped that the boys of the Upper Tertia will be able to gain some knowledge of the meaning of a function, and have some acquaintance with three dimensional geometry. As an experiment these *Reform-pläne* are to be introduced into five higher schools, and the result will be watched in Germany, and here also, with much interest. There is little doubt that hitherto the teaching of mathematics in German schools has been unsurpassed. But there is a danger that the excellence of the training may result in the evil of over-teaching. The time-tables in German schools comprise so many subjects that little opportunity remains for a boy to act individually. This difficulty has not passed unnoticed, and a remedy, proposed by Dr. Matthias, is the subject of further experiment. Dr. Matthias proposes to allow pupils in the Oberprima to specialise in a restricted number of subjects, to be chosen according to the pupil's instincts and ability. But this proposition will entail an increase of staff, and the pecuniary difficulty will prevent its introduction to any wide extent. But, where introduced, it will have a good effect on the mathematical standard. Germany has already settled the first great difficulty of mathematical teaching—the selection of the subject matter. She will quickly dispose of its companion—pottering.

AT the twenty-eighth annual meeting of the Library Association resolutions recommending a closer co-operation between the public libraries and educational authorities were adopted. It was considered desirable, for instance, that conferences between teachers and librarians should be held occasionally, and that the public librarian should keep in touch with educational work in his area. Dr. Hill, master of Downing College, ex-

pressed his opinion that a room in every library should be set apart for the use of various societies, and added further that he thought every librarian should become a member of the National Home Reading Union, and thereby become better qualified to aid readers in their choice of books. It was pointed out that it had been the practice for some years in Cardiff to give every child leaving school a ticket for the adult library, for which no guarantee was needed. As bearing on this question we note that the London County Council has issued a list of books which it is prepared to loan for general reading in evening schools during the session.

THE National Education Association has issued a statement relative to the existing methods by which the financial administration of public education is secured. The Treasury estimates for the year ending March 31st, 1906, provide an expenditure from the national exchequer upon education of more than £17,000,000. Of this £11,000,000 goes to the public elementary day schools of England and Wales. The Association points out that this is twenty times as much as was given in 1870, although the attendance has increased only five-fold. Further, it is probable that £8,000,000 will be provided from the rates this year. It is asserted that the burden of the rate is very unequally distributed throughout the country, and that it is imperative that a reconsideration of the principle on which Government grants are allotted should be made. The old system of "payment by result" involving an individual examination every year of every child is a model to be avoided, whilst the other system of single large payments for an easily ascertained result, such as the building grant, is a model to be copied. The Association urges the withdrawal of some of the aid grant from the richest to the poorest districts, and the abolition or restriction of subsidies to institutions not under public management. The memorandum concludes by drawing attention to the latest "dole" of about £750,000 per annum, given without condition (August 1st), and says that the demand from East Ham, &c., could generously have been met by £50,000 or £100,000 given to those who really needed it. Instead of this the Government have raised the ordinary grant to 24s. for all scholars over five years of age, which, it is contended, fails to give any adequate relief to necessitous districts.

THE Summer Vacation School at Scarborough, arranged by the West Riding Education Committee, appears to have been a complete success. The school was inaugurated on July 31st, when Mr. A. H. Acland delivered the opening address and Miss Manley, principal of Stockwell Training College, also spoke. The work lasted until August 18th, and was attended by nearly 100 teachers who, with one or two exceptions, were engaged in teaching in the elementary, evening, or secondary Schools in the West Riding. The school was divided into two sessions, each session consisting of a short course of six or seven lectures, time being allowed in each lecture for questions and discussions. During the first session, lectures were given on the "Theory of Kindergarten," by Miss C. R. Murray; on "School Hygiene," by Miss Morris; and on the "Teaching of Literature and English," by Mr. C. E. Rice and Mrs. Clifford Granville. During the second session, lectures were given by Prof. Kendall, on the "Teaching of Geography"; Prof. Findlay, on "Method in Class Teaching"; and Direktor Max Walter, of the Musterschule, Frankfurt-am-Main, on the "Reform Method of Teaching Modern Languages." A three weeks' course in physical instruction was given by Herr Knudsen, Physicalinspektoren, Copenhagen. Apart from the work done in practical gymnastics, time each day was devoted to practice in teaching to a class of boys, and lectures on physiology and anatomy, and explanation of the exercises. In addition, evening lectures and discussions were

also held. Mr. F. S. Marvin read a paper, which was followed by a discussion, "On getting Stale." Prof. Findlay introduced a discussion on "The Betterment of Infant Schools." Miss Robertson gave a lecture on "Ruskin, as an Educational Reformer," and Mr. J. G. Hamilton opened a discussion on the "Teaching of Elementary Mathematics."

THE Board of Education's list of Inspectors arranged according to county areas has been published. There are ten divisions in England and Wales. The work of inspection falls into five classes: elementary, technological and evening schools, secondary schools and pupil teachers' centres, art classes, training colleges. An inspector will, in future, confine his attention to one class of work—a change which the Board considers advisable in the interests of the Inspectors themselves as giving them a wider range of experience upon which to base their reports. For elementary, and for technological and evening schools, there are divisional inspectors; the secondary schools are not yet sufficiently numerous to justify the appointment of divisional inspectors, though the Chief Inspector, Mr. Fletcher, and three staff inspectors, Messrs. Headlam, Scott, and Spencer, are not allocated to any particular district. The same reservation applies to the Board's women Inspectors generally. The chief Inspectors in the order indicated above are Messrs. Jackson, Buckmaster, Fletcher, Carlidge, Barnett, and the chief woman Inspector is the Hon. Maude Lawrence.

THE Board of Education has issued circulars to public libraries and local education authorities recommending to their notice the aims and methods of the National Home Reading Union. Since its foundation in 1889 one of the principal aims of the Union has been to encourage children to read books for themselves under the guidance of competent scholars. Its efforts have thus been directed to the broadening, prolonging and confirming the influence of school education, and there can be no question as to the national importance of the work it has undertaken. The sympathetic co-operation of library and education authorities with the Union would, accordingly, be viewed with approbation by the Board of Education. The Union has outlined the methods of such co-operation briefly as follows: Librarians, on payment of 10s. 6d. per annum, to become honorary members of the Union, thereby receiving gratis the selected list of books, &c. Most of the books are, as a rule, already stocked by the libraries. The card supplied by the Union should be displayed in the library, and the librarian might organise "reading circles." Teachers in elementary schools and pupil teacher centres might become members on payment by the local education authorities of 1s. 6d. per annum, and might then form "home-reading" circles under their supervision. The selected books of the Union might be adopted as class readers, and the children allowed to take the books home. There is little doubt that the proposed experiment would eventually prove highly successful, and it is to be hoped that the Board of Education's circular will have the desired effect. The secretary of the National Home Reading Union (Surrey House, Victoria Embankment, W.C.) is Mr. Vere Collins; he is prepared to confer with librarians and education officers upon the best means of bringing the work of the Union into relation with the needs of their particular districts.

IN about 272 school buildings, situated in every part of London, evening schools were opened in connection with the London County School on September 18th. The instruction in these schools will be of a character preparatory to that given in higher institutions, and will embrace commercial subjects and general subjects. Women and girls will be able to receive lessons in practical cookery, dress-cutting and dress-making,

and laundry-work; and instruction in woodwork will be provided for men and boys. Gymnastics will be taught, and lectures by doctors and nurses on first aid, home nursing, health and infant care will be given. Scholars under sixteen will be admitted free. In sixty-five schools, situated in poor districts, no fees will be charged, but as a rule a charge of one shilling for the session for one or more subjects will be made to students of sixteen years and over. In addition, there are thirty-four commercial and science and art centres where instruction of a more advanced character will be given. As in the case of evening schools, scholars under sixteen at the commencement of the session will be admitted free. To other students, fees of two shillings and sixpence in the case of commercial centres, and five shillings in the case of science and art centres, will be charged for the session. Instruction of a still higher description will be provided in the various polytechnics, technical institutes and schools of art situated in the county. The fees are nominal, and in many cases apprentices, learners, and improvers are admitted free. Every facility is offered to different types of students to supplement workshop, office or studio practice by evening study under the most favourable conditions. The great success which has in the past attended the classes held at the Council's institutes and schools of art has made it necessary in several cases to provide for additional meetings of such classes to accommodate the increased number of students, and it is also proposed, provided the necessary number of students be forthcoming, to open certain new classes for which frequent application has been made.

THE South Kensington School of Art Wood-carving, which now occupies rooms on the top floor of the new building of the Royal School of Art Needlework in Exhibition Road, has been re-opened after the usual vacation. We are requested to state that some of the free studentships maintained by means of funds granted to the school by the London County Council are vacant. The day classes of the school are held from 10 to 1 and 2 to 5 on five days of the week, and from 10 to 1 on Saturdays. The evening class meets on three evenings a week and on Saturday afternoons. Forms of application for the free studentships and any further particulars relating to the school may be obtained from the manager.

THE Surrey County Council Education Committee has decided to award exhibitions of a hundred railway fares in order to enable scholars from country districts to attend secondary schools in adjacent towns.

AT the recent Oxford Local Examinations there were 14,222 candidates, as against 14,149 last year; 9,732 certificates were awarded, comparing with 9,805 a year ago. The examiners report considerable improvement in religious knowledge, English, and science. It is of interest to note that T. W. Chaundy, Oxford High School, who last year was at the head of the Junior list, is this year first among the Seniors.

THE 1905-6 session at Birkbeck College will commence on October 2nd, when Sir Edward Fry will deliver an address in the theatre. The courses of lectures and practical work in science aim at giving systematic instruction in various branches of science; they are arranged to meet the requirements of the examinations of the University of London for degree in science, and are also adapted to the needs of students for Conjoint Board and other examinations. A metallurgical course in science, with practical work, has been organised to give complete preparation in metallurgy and mining for those qualifying for the mining profession. Courses of study for the London University Examination in the Faculties of Arts and Law are also provided.

THE London County Council has awarded nine students scholarships at Cambridge University of £60 per annum for three years, together with an annual grant of £30 towards their tuition fees. Twenty-eight senior county exhibitions, value £30 to £70 per annum tenable at university colleges, nine free college instruction scholarships, and a hundred intermediate scholarships have also been awarded.

A CORRESPONDENT, writing from De Kaap, in the Transvaal, directs our attention to methods of determining the relative density of solids which, he thinks, may not be in general use among teachers, because he has failed to find the processes described in some books on physics. We are under the impression that the methods employed by our correspondent are already familiar to most teachers, but for the benefit of any readers who have not yet adopted the plans, we repeat them here.

First method.—(i.) Weigh the given solid in air. Weight = a . (ii) Weigh a suitable sinker in water. Weight in water = b . (iii) Weigh sinker and solid in water. Weight in water = c . In (iii) the forces acting on the left-hand arm of the balance are the effective pull of the sinker = b , plus the effective pull of the solid upwards = a , minus the weight of water displaced by the given solid = W .

$$\therefore b + a - W = c$$

$$\therefore W = b + a - c$$

$$\therefore \text{Relative density required} = \frac{a}{b + a - c}$$

Second method.—(i) Weigh the given solid in air. Weight = a . (ii) From the balance suspend the sinker in water and counterpoise with sand. (iii) From the balance suspend the sinker and solid in water and remove sand until equilibrium is secured. (iv) Weigh the sand removed. Weight = d . The weight of the sand is equal to the decrease in the downward pull on the left-hand arm of the balance caused by the suspension of the solid in water = $W - a$.

$$\therefore W - a = d$$

$$\therefore W = a + d$$

$$\text{Relative density required} = \frac{a}{a + d}$$

THE arrangements at the Oxford School of Geography for the Michaelmas term have now been published. The Reader in Geography (Dr. A. J. Herbertson) will lecture weekly on "The British Isles"; twice weekly on "The Regional Geography of the Southern Continents, that of South Africa in greater detail"; and weekly on "Types of Land Forms." The Reader will give practical instruction in Regional Geography and will conduct field excursions. The Seminar for the discussion of recent geographical literature will meet weekly, under the direction of the Reader. Dr. Grundy will lecture weekly on "The Geography of Herodotus." He will also read with students who select Ancient Geography as a special subject at hours to be arranged. Mr. Beazley will read with students who select the History of Geography as a special subject, at hours to be arranged. Mr. J. L. Myres will lecture weekly (for the Reader) on the "Geographical Distribution of Man." Mr. N. F. Mackenzie will conduct a weekly class in "Topographical Surveying" and will also give more advanced instruction in surveying, at hours to be arranged.

WE have received the second and third numbers (September and October) of *SkeenJinavisk Manadsrevy för under-visning i de tre Nufvultspråken* (Lund, Sweden). From these we gather that the English library which the English editor, Mr. C. S. Fearenside, proposes to form is intended to provide foreign literature for Swedish readers. We should add that the review is not, as its cumbersome title would seem to indicate, written in

Swedish, but is divided almost equally between English, French, and German. The September number contains two interesting articles on Schiller and Schiller literature by Dr. Heinz Hungerland, a bright *causerie* on the art of translation by M. Camille Polack, and a suggestive article showing, in parallel columns, the English books suggested by the Board of Education for English secondary schools, and the English books chiefly read in Swedish schools. Dr. Hungerland's articles in the October number advocating greater attention to "Things" in modern language teaching, and the engagement of itinerant foreign lecturers in schools, should interest teachers of modern languages. About one-fifth of the review is occupied with translations of Swedish texts into the "three chief languages"; and even this part of the paper might be of service to English readers who wish to "pick up a little Swedish" without making a special study of the language, or to take up the comparative study of languages.

AN interesting article in last month's *Journal of Education* deals, amongst other things, with the profits made by house masters. Assuming that the house contains twenty-five boys—a maximum, according to the writer—at the "low boarding fee of £45 a year," we are told that the profit should be £214 per annum. This is arrived at as follows: (1) servants (matron, cook, three maids, boy) — wages, board, washing, £237; (2) board of twenty-five boys, of master, wife, and house tutor, £474; (3) proportion of rent and taxes, £150; (4) depreciation, washing, coal, £50; total, £911. The boys' fees would amount to £1,125. The deduction is drawn that many house masters make unduly large profits. It is interesting to examine the second item a little more closely: £474 as the cost of board for twenty-eight persons (for forty weeks in the year) works out at about 1s. 2½d. per head per day. It seems to us that this is considerably above the average daily cost in houses where the boarding fees are £45 a year, and we should be inclined to estimate the profits on such an establishment to be more than £300. Further statistics would be welcome, but there are obvious difficulties in the way of their being supplied.

AN article in the *Morning Post*, contending that there should be no artificial barrier to promotion for teachers from elementary schools to secondary schools, has been the subject of discussion in the correspondence columns of that journal. On one hand a correspondent wrote arguing that there was a wide difference between the aims and possibilities of elementary and secondary schools, and that the worst possible training for a career in a secondary school was an elementary school training. He instanced in support of his argument the large classes of sixty, seventy, or eighty children which one teacher commonly had to undertake. Writers on the other side pointed out that even in this respect matters were slowly improving, and, generally, took exception to the tone of his letter deprecating the suitability of the elementary teacher for "secondary" work. Agreement was expressed with the editor's opinions that the underlying principles of elementary and secondary education were identical, and that, far from being a hindrance, the professional training and experience of large classes were calculated to help in the work of secondary education. The chairman of the Parliamentary committee of the National Union of Teachers wrote formulating the demands of that body, viz., the abolition of the columns A and B of the Teachers' Register, the substitution of a single column, and the prevention of artificial restrictions being placed on teachers entering the profession in order to prevent them from obtaining such academic qualifications as their abilities bring within their reach. By the way, when may we expect to hear what the Board of Education intends doing next March, when the Registration Council ceases to exist? As the matter stands at present, after that date, training will be an essential condition for registration in Col. B.

MESSRS. A. GALLENKAMP & CO., LTD., of Sun Street, Finsbury Square, E.C., have sent us a copy of their new List of Filter Papers, for which they hold the sole agency for the United Kingdom and the British Colonies. The particulars contained in the list should prove of assistance to teachers of chemistry.

SCOTTISH.

THE Scotch Education Department has sent out a notice directing the attention of School Boards and managers to the information contained in a circular issued by the Post Office with regard to the facilities that exist for the banking of small sums by children attending schools. Mr. Struthers points out that penny banks of one kind or another have been in existence for many years in a large number of schools throughout Scotland, especially in the more important towns; and it is because the Department believes that these and similar forms of thrift have had a most beneficial influence on the character of young people of both sexes that it is anxious to see the benefit they confer spread over as wide a field as possible. It is hoped, therefore, that managers and teachers alike will do what is in their power to promote the objects in view by impressing upon boys and girls the extreme importance of cultivating habits of economy and thrift, and that they will contribute practically to this end by encouraging the establishment of school penny-banks, or as an alternative the adoption of the "stamp deposit system," a full description of which is found in the accompanying Post Office circular. It is added that postmasters all over the country have been instructed by the postal authorities to give their assistance and advice when consulted on any points connected with the practical working of either of these two methods of school banking.

THE Lord Advocate has just issued a statement respecting the Scottish Teachers' Superannuation Fund. From this it appears that from April 1st, 1899, the date of the commencement of the Superannuation Act, to March 31st, 1905, there was contributed to the Deferred Annuity (Scotland) Fund the sum of £118,730, the respective contributions of men and women teachers being £61,934 and £56,796. During the same period the Treasury sanctioned payment of (a) annuities to 81 teachers (163 men and 18 women); (b) superannuation allowances amounting to £3,774 to 109 teachers (91 men and 18 women); and (c) disablement allowances amounting to £3,476 to 129 teachers (51 men and 78 women). On March 31st, 1905, the number of teachers in receipt of annuities and allowances was 204 (92 men and 112 women). These figures are of special interest in view of the actuarial investigation into the state of the fund next year.

AN interesting correspondence has taken place between the Scottish and English Education Departments in reference to the movement referred to in last week's items for greater accuracy of nomenclature in connection with Scottish history. The Scotch Education Department wrote to the Board of Education, asking that they should give such instructions as they saw fit with a view to secure in the text-books under the Board reasonable accuracy of expression in matters which concern the history of Scotland and the relation of that country with England. The Board of Education, in reply, expresses general agreement with the Education Department's desire for greater accuracy of expression, but does not feel justified in taking any formal steps towards that end. The supervision of text-books, they point out, is really a matter for the local education authorities, and they suggest that any further communications on this subject should be addressed to these bodies.

THE success of the Edinburgh Vacation Courses has been complete and unqualified. The statistics of attendance show that 353 students were regularly enrolled, while 100 others attended more or less regularly some of the lectures. About two-thirds of the students were British; of the others an overwhelming majority were German, though France, Switzerland, Italy and the Colonies had a fair representation. The world-wide reputation of many of the lecturers must certainly have been an important factor in bringing together such large numbers, but the large attendance of our own teachers is a splendid testimony to their enthusiasm for their profession, and their desire for greater knowledge and efficiency. At the closing social meeting the students united in doing honour to Prof. Kirkpatrick, to whose untiring labours and indefatigable zeal the success of the vacation courses has been mainly due.

AN exhibition of quite a remarkable character has just been opened within the National Portrait Gallery, Edinburgh. It is styled an exhibition of "Architectural Refinement," and is meant to illustrate and prove the fact that in pre-renaissance architecture there is to be found a preconceived, intentional and subtle avoidance of formal regularity. The collection has been brought together by Mr. Goodyear, curator of the Brooklyn Museum, and represents the labours of over thirty years. The exhibition appeals naturally with greatest force to the architectural expert, but remembering Mr. Ruskin's observation that all men are concerned with architecture and have at some time of their lives serious business with it, the present collection cannot fail to arouse the interest of the mere layman. At any rate, the educational value of the exhibition cannot be too highly prized, and teachers in particular will find much here to interest and instruct them. The need for previous knowledge of architecture is largely discounted by the use of an analytical catalogue which is issued explaining some of the striking effects displayed in the photographs and drawings.

THE distribution of the general aid grant, which represents the amount given to Scotland as an equivalent for certain new grants made to England under the English Education Act of 1902, has been annually provided for by Minutes of the Scotch Education Department. The minutes of 1904 and 1905 contained a clause providing that any balance of the grant remaining after certain specified claims had been met should be carried to a suspense account to be distributed according to further Minutes of the Department. Under the Education Bill of this year these balances, amounting to about £211,000, were carried to the proposed Education (Scotland) Fund. Owing to the withdrawal of the Bill, it has now become necessary to make other arrangements for the balances in question, and a Minute has just been issued providing for their distribution as follows:—(i) In providing buildings or equipment approved by the Department as necessary for the purpose of training teachers. (ii) In providing buildings or equipment necessary for the purpose of giving advanced technical instruction in any recognised central institution, provided the objects of the expenditure are approved by the Department, and that there shall be an adequate local contribution towards the same objects. (iii) In providing initial equipment for supplying industrial training to boys and girls resident in the Island of Lewis.

THE annual general meeting of the Association of School Board Clerks and Treasurers was held in the Glasgow School Board offices on September 15th. The chairman, Mr. Niven, clerk to the Greenock School Board, in opening the proceedings, said that they might congratulate themselves that they had survived destruction by two Education Bills. Having thus far stood the test of fire, they might surely

hope that they were reserved for a better and nobler fate than either of the Bills provided for them. The discussions on the Bills had proved that the School Board system would not lightly be discarded by the people of Scotland, and he trusted they had heard the last of the attempts to overthrow or displace it.

IRISH.

THE results of the Intermediate Examinations held last June were published on September 2nd, and the exhibition and prize list on September 9th. Both were published in book form, but the results' book contained only the numbers and not the names of the candidates, while the exhibition and prize list contained both. This is a partial reversion to the old system which was so loudly condemned two or three years back, and if it is to be revived there seems no adequate reason why it should not be so in its entirety. The book of results is so complicated that none but an expert can understand it. It would hardly be possible to present them to the public in a more puzzling form, and we would suggest to the commissioners that it would be better and simpler to publish the gross mark in every subject in which a candidate passes. Marks on the pass and honour papers could then be easily distinguished by the use of italics, and it would not be difficult for exhibitors to calculate their totals. In one respect 1905 makes a record, for never before have so many candidates been examined, the total being 9,677.

THE following is a summary of the results:—

	Boys					Total
	Grade—Senior	Middle	Junior	Prep.		
Number Examined	414	1,071	3,360	2,173	7,018	
Number who Passed—						
With Honours	151	236	350	—	737	
Without Honours	185	576	1,963	1,468	4,192	
Total	336	812	2,313	1,468	4,929	
Percentage of Passes	81.2	75.8	68.8	67.6	70.2	

	GIRLS					Total
	Grade—Senior	Middle	Junior	Prep.		
Number Examined	134	429	1,320	776	2,659	
Number who passed—						
With Honours	41	97	107	—	245	
Without Honours	65	211	692	508	14,76	
Total	106	308	799	508	17,21	
Percentage of Passes	79.1	71.8	60.5	65.5	64.7	

THE percentage of passes among the girls is practically the same as last year, when it was 65, but among the boys it forms a record, that for last year being only 62.7, there being a marked advance in both the junior and preparatory grades.

THE following table shows the number of exhibitions and prizes awarded this year as compared with last:—

	Boys			GIRLS		
	1904	1905		1904	1905	
Senior Grade Exhibitions	31	56	13	13	13	
Prizes	41	43	12	12	12	
Middle Grade Exhibitions	60	40	11	19	19	
Prizes	95	79	39	40	40	
Junior Grade Exhibitions	138	119	41	44	44	
Prizes	89	106	40	34	34	
Total Exhibitions	229	215	65	76	76	
Prizes	225	226	91	86	86	
Totals of Exhibitions and Prizes	454	441	156	162	162	

IT will be seen that, while the total number of exhibitions and prizes remains almost the same, there has been a great decrease in the number of middle grade and a great increase in that of the senior grade exhibitions.

THE Catholic Scholarship Committee, of which his Grace the Archbishop of Dublin is chairman, has issued an appeal for funds and a scheme of university scholarships for Catholic students. The Bishops have guaranteed £1,000 a year for two years. Monsignor Molloy has offered £100 on condition that

nine others give a like sum before November 1st, and four contributions of that amount have already been given. Under the scholarship fund twelve scholarships at least will be awarded in the year 1905, viz., eight first class scholarships of £50 a year each for three years, and four second class of £25 a year for the same period. They are open to boys and girls, and are tenable for boys at University College, Dublin, and for girls at Loreto College, Dublin, or St. Mary's College, Dublin. Candidates must matriculate in the Royal University in 1905, and have passed the senior grade of the Intermediate Education Board, either in 1905 or in some previous year. The scholarships will be awarded by the committee on the results of the Intermediate Examinations. The secretary of the committee is the Very Rev. Wm. Delany, S.J., University College, Dublin. The following special scholarships will also be awarded in the year 1905: two scholarships of £50 a year each for three years for boys educated in the Christian Brothers' Schools in the diocese of Dublin, to be awarded to the two best boys in the modern literature and experimental courses respectively of the senior grade. These are founded by his Grace the Archbishop. Three others of £40 a year each for three years for boys educated at Clongowes Wood College, awarded, one to the highest boy in classics, one to the highest boy in mathematics, and one to the highest boy in classics and mathematics together, as shown by the senior grade results.

THE National Board of Education has issued a new scheme for the appointment of monitors and pupil teachers in National schools with the object of attracting candidates from Intermediate schools. They must in both cases be between 15 and 17 years of age on the 1st of June of the year in which they are appointed. The full period of service and training for monitors is three years, and students are eligible as such who have passed in the junior or middle grade under the Intermediate Board. Pupil teachers are eligible from Intermediate students who have passed with honours in the junior or middle grade. For those who have only passed the junior grade the period of service is three years, and for those who have passed the middle two years.

IN connection with the newly established training department for teachers at Alexandra College, Dublin, a course of four lectures on psychology was given by Miss Ethel Cunningham, the mistress of method, on September 26th and following days. The lectures were entitled: the psychology of childhood, psychology for teachers, essentials of true education, and educational reformers. The College is also offering five scholarships in connection with the scheme of training, three of £20 and two of £10.

WELSH.

THE eighth annual report of the Central Welsh Board, which deals with the Welsh intermediate schools, has been published. The number of pupils in the schools in 1904 was 9,284; in 1903, 8,789; in 1902, 8,322. The schools are 95 in number. The teachers number 541, of whom 376 hold a degree or equivalent certificate. The report, speaking of Welsh, says: "It is important that the language, literature and history of Wales (with especial reference to the district where the school is placed) should find their rightful place in the school curricula. Any details arising from schemes or from existing curricula of school work to the attainment of this end should be carefully considered by the County education authorities, and reported to the Central Welsh Board, so that the necessary representations may be made for their removal." From the examiner's report it appears that the total number of candidates examined

this year was 463 against 410 last year, an increase of nearly 13 per cent.

THE cost of examination and instruction, together with administration expenses of the Board, was £6,050. The average cost per school thus comes to £63 13s. 9d., and the average cost per pupil on the books 13s.

PUPIL teacher centres have been established during the last year at Llanelly, Carmarthen, and Llandilo schools, under the Carmarthenshire County Council. The local education authority is educating at present 113 pupils who purpose entering the teaching profession. For these pupils the authority is paying directly an annual sum of £1,250 for salaries of staff, a further sum of £505 for the fees of their pupil teacher scholars, a sum of £242 towards the travelling and maintenance expenses of pupil teachers, in addition to an annual grant, amounting at present to £102, towards maintenance expenses. The total is £2,099.

THE auditor's report of this county authority continues: That the cost of maintenance in the intermediate schools of the county averages from £9 10s. to £10 per pupil. The maintenance cost per head at Carmarthen is £13 6s. 11d.; at Llandovery (which occupies an extraordinary position), £19 10s. 1d.; at Llanelly, £9 19s.; at Llandilo, £9 14s. 5d.; and at Whitland, £9 12s. 11d. One of the most remarkable features of the year is the continued development of the Llanelly schools. The Carmarthen schools remain upon the whole stationary; Llandyssul shows an increase in the number of scholars; Llandovery school does not improve, but a conscientious effort is being made to strengthen the financial condition of this school.

THE second revolt school in Merionethshire was opened in Upper Maentwrog Calvinistic Methodist Chapel. There were at first 23 Nonconformist pupils drawn from the National School. It appears that the National School opened with 39 scholars, 12 of whom were Nonconformists. At Carrog another emergency school has been started for the infants in the vestry of the Baptist Chapel, and for the other children in the vestry of the Calvinistic Methodist Chapel. The 90 scholars of the National School have been reduced to 35, while 54 have been enrolled in the emergency school.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Mérimée, Mateo Falcone and L'Enlèvement de la Redoute. Edited by W. G. Hartog. 69 pp. (Rivingtons.) 1s.—This is by no means the first time that these excellent short stories have been edited for English schools. Mr. Hartog always does his work with care, and we can praise his notes (in French), his "reform exercises," and his vocabulary, which seems to be practically complete. It is a pity that no short life of Mérimée is prefixed. By an oversight there is no indication of the way in which the text has been divided into sections. The A, B, &c., of the exercises suggests such a division. The illustrations are not satisfactory; line drawings would have been better. We have noted a few misprints: *Mérimée* (title page), *à jà* (p. 31, l. 22), *plébiéens* (p. 37, l. 12).

Longer Poems for Recitation. Edited by L. A. Barbé. 48 pp. (Blackie.) 4d.—This recent addition to "Blackie's Little French Classics" contains twelve poems of Béranger, Chénier, Victor Hugo, Gautier and others, well suited for recitation by older

pupils. It is a welcome novelty in this series to find the notes and the short biographies written in French. Mr. Barbé has done his work conscientiously and well. We have only noticed two small points: on what authority is Obéron described as "roi des génies de l'air"? On p. 45, l. 31, *échee* should be *échev*.

Voltaire, Le Blanc et le Noir. Edited by H. H. Horton. 31 pp. (Blackie.) 4d.—This short story makes good reading. It has been capably edited; the note on Voltaire is well written, and the notes are quite satisfactory.

Masson, Les Enfants Célèbres. Edited by L. A. Barbé. 44 pp. (Blackie.) 4d.—The pathetic stories of Napoleon II., Ambroise de Boufflers and Elisabeth Cazotte have been attractively told by Masson, and it was a happy thought to include them in "Blackie's Little French Classics." The notes are full and distinctly good.

La Comtesse de Ségur, Mémoires d'un Anc. Edited by Lucy E. Farrar. viii. + 63 pp. (Arnold.) 1s.—This is an amusing story, suitable for the third year of instruction. Miss Farrar contributes a short biographical note and some capital "reform exercises," consisting of questions on the text and on grammar and word formation; there are also short passages for retranslation. A vocabulary is given, but there is no information as to the principle on which it has been compiled. Many words are omitted, and those given are sometimes not in alphabetical order. The text is carefully printed; we have only noticed *mêmes* for *mimes* on p. 24.

Arnold's French Texts: (1) *A. de Vigny, Laurette ou le Cachet Rouge.* 48 pp. (2) *J. Michelet, Deux Héroïnes de la Révolution.* 48 pp. (3) *Le Sage, Crispin Rival de son Maître.* 48 pp. (4) *Balzac, Mercadet.* 64 pp. Edited by M. A. Gerthwohl. (Arnold.) 6d. each.—Each of these volumes contains a well-written biographical note, a neatly-printed text, adequate notes (mainly consisting of English renderings), and a vocabulary which is anything but complete. If a common word like *faire* is given, why not *traversé* (*mon manteau est traversé*? If *beaucoup* is given, why not *peu*? If *douter* is given, why not *croire*? As for the texts, (1) is a well-chosen tale, probably known to many; (2) contains Michelet's excellent account of Madame Roland and Charlotte Corday; (3) is a neat and harmless farce; (4) a cruel comedy, so mean that we should not like to read it with a class. We have little but praise for the notes; "pastoral novelette," however, strikes us as a misleading description of *Paul et Virginie* (p. 39), and we do not like *an eulogium* (2, p. 38). The only misprints noticed are: in (1) *lui* for *de lui* (p. 8, l. 3), *mais* for *mais* (p. 16, l. 11), *avait* for *avait* (p. 24, l. 24); in (2) *passioné* for *passionné* (p. 5, l. 16), *Philipon* for *Philippon* (p. 7, l. 6), *redoutable* (p. 8, l. 22), *gêler* for *léger* (p. 9, l. 6), *temoignage* (p. 12, l. 19), *port* for *part* (p. 14, l. 26), *de* for *des* (p. 16, l. 1), *arrêté* (p. 17, l. 6), *surêté* (p. 29, l. 31), *quelle* for *qu'elle* (p. 30, l. 22), in (3) *passioné* for *passionné* (p. 14, l. 26), *pençtrant* (p. 26, l. 30), *interèt* (p. 44, l. 25); in (4) *arrête* (p. 22, l. 23), *tres* (p. 26, l. 16), *le guéridon* (p. 62, l. 9).

Dent's New First German Book. By W. Rippmann and S. Alge. vi. + 180 pp. (Dent.) 2s.—There is little resemblance between this book and that published six years ago, which it will supersede. Even some of the names are different, for Karl has become Wilhelm, and Paul has been rechristened Richard. The pictures of the seasons used as the scenes of the conversation exercises appear also in the "New First French Book," and are vastly superior to those in the earlier books. Moreover, the simple grammatical principles which should accompany even early lessons, but were often sadly neglected

by ardent advocates of reform methods, are set down in a more instructive manner than formerly. The grammar is in German as heretofore, and the vocabulary is still without an English word, though its plan has been altered. In our opinion, the changes are all of the nature of improvements, because they evidently represent the results of experience gained by Prof. Rippmann and other teachers since the first English version of Alge and Hamburger's "Leitfaden für den ersten Unterricht in Deutschen" was published. The original adaptation of this book to the needs of our schools did pioneer work for the rational study of living languages; and the success which it achieved will, we believe, be equalled, if not excelled, by the volume now available.

E. Mörike, Mozart auf der Reise nach Prag. Edited by W. G. Howard. xii + 125 pp. (Heath).—Mörike's work is too little known in England, and we are therefore glad to have a school edition of this delightful short story from his pen, which describes a day of Mozart's life by means of a most attractive combination of fact and fancy, with the result that the great musician's lovable figure stands out clearly. The editor supplies a short account of Mörike; then follows the well printed text, and notes which elucidate all difficulties. The renderings, it is true, sometimes betray trans-Atlantic origin and sometimes they are anything but elegant. "Mörite" on the title page is a bad blunder. On the whole the book is good.

De la Motte-Fouqué, Sintram. Edited by Medina Pittis. 48 pp. (Blackie.) 6d.—This queer "romantic" tale cannot be regarded as suitable for class work, and can hardly be recommended even for the pupil's private reading. The scene is Norway in the 10th century, with local colour of doubtful accuracy; the language is often archaic; and the notes are scanty.

A Practical German Grammar, Reader and Writer. Part I. Elementary. By L. Lubovius. xx. + 200 pp. (Blackwood.) 2s.—The principles underlying this book are generally sound. It is claimed (after a fashion which is becoming increasingly common) that it represents all that is best in the old and the new methods. As a matter of fact, it approaches far more closely to the new than to the old. At the beginning we have exercises in the pronunciation; we miss any clear distinction between close and open vowels. Thus on p. xiv. the vowel in *Bür* is not given, and the difference in quality between *o* in *Söhne* and *ü* in *könnte* is not indicated. Nothing is said about the difference between German and English *l* in quality (and often in quantity). In the lessons the grammar is introduced with considerable skill, but at rather a quick pace. Word for word translation, and translation from the mother tongue, forms a feature of the lessons. On the other hand, use is made of the Hölzel picture of Spring, and it is amusing to find that the persons of it have very much the same names as in the well known book which introduced these pictures to English modern-language teachers. The second part contains a number of anecdotes and stories with exercises in word formation and grammar, questions on the text and sentences for retranslation; also songs and poems. The misprints are generally trivial. The translation of Goethe's *Ein Gleiches* by *A Like (Fate)*, as the title of *Über allen Gipfeln ist Ruh* is a curious slip. Heine was probably born in 1797, not 1799. On p. 9, l. 11, it should be *Sie*, not *sie*; on p. 17, l. 13, *It is*, not *Is it*; p. 23, l. 18, delete *learned*; p. 70, l. 9, *Schneemann*, not *-man*; p. 110, l. 24, *Eine*, not *Cine*.

C. F. Beyer, Der Schuss von der Kanzel. Edited by M. H. Haertel. xiii. + 141 pp. (Ginn.) 1s. 6d.—This is an excellent short story, precious as one of the very few humorous

writings from the pen of the great Swiss novelist, whose life is well summarised by the editor. We recommend the story warmly to all who desire an interesting reader for a fairly advanced class of pupils, especially as the notes are generally satisfactory and the vocabulary seems to be complete. The text is commendably free from misprints. The notes are marred by some Americanisms, e.g., "there's a nigger in the woodpile." To write a note on Tell without referring to Schiller's play (see p. 77) is quite an achievement. It should be added that there are exercises in composition based on the text.

Gedichte zum Auswendiglernen. Selected and edited by W. P. Chalmers. ix. + 127 pp. (Harrap.) 1s. 6d.—How far it is wise to learn German poetry by heart is a point which has not yet been settled. In the case of beginners it may serve to fix in their minds old-fashioned words and constructions. For older pupils it may be a welcome exercise; and therefore a selection of poems for this purpose might be welcomed. It must, however, be confessed that the poems in the volume before us have not been carefully edited, though the selection is good on the whole. Misprints are very common; for instance, *is* for *ist* (No. 24), *Gefellen* for *Gesellen* (No. 31), *Lorelie* (No. 35), *zeit* for *Zeit* (No. 36), *nacht* for *Nacht* (No. 40), *Cr* for *Er* (No. 45), *aber* for *über* (No. 55), *sichex* for *sicher* (No. 61), *kahl* for *kühl* (No. 64), and many more. The notes are also unsatisfactory.

Classics.

Horace, Odes, I., II., III., IV. Edited by Dr. W. H. D. Rouse. (Blackie's Latin Texts).—What we said last month about Mr. Jones's "Eutropius" in this series applies in the main to the four little books in front of us. Schoolmasters, who for one reason or another do not want to use the annotated texts, that have become too much the vogue, should welcome this series because the books are cheap, well-printed, contain scholarly texts and sound spelling, have long quantities marked, and supply a general introduction which is short and to the point. We have noticed a few cases of long syllables not marked, but, as we said before, this is a very excusable fault in the execution of what must be eye-trying work to the editors. Dr. Rouse's introduction deals lucidly with the life and style of Horace, Horatian MSS., and Principles of Criticism. These two latter subjects may here and there stimulate a certain interest in boys between the age of twelve and fifteen, but we fancy they will be caviare to the general. Perhaps thirty per cent. of the teachers who handle these books will taste these sections, but on the whole we cannot blame them if they do not. Anyway, these two or three papers are there for those who need them, and they are a sort of guarantee that the editors have understood their business. The other two sections are thoroughly useful and practical. We extend a hearty welcome to a series of texts which should be entirely in accord with the programme of the Classical Association.

Livy V. Edited by E. Seymer Thompon. 75 pp. (Blackie's Latin Texts.) 8d.—As this series expands in the hands of different editors we are forced to doubt whether they have been sufficiently impressed with the necessity of writing their introductions in simple words. The texts seem clearly enough to be intended for the early stages of Latin learning, say the first three years. The section on the style of Livy in the book before us contains good matter, but not much effort has been expended in putting it within the grasp of a boy of thirteen or fourteen. Dr. Rouse should see to this, and aim at uniformity on this point. We notice the spelling *novom* more than once. Why not *novum*? The principle adopted in this series being obviously to use *v* for consonant and *u* for vowel,

there is no danger of confusion in *novom*, though there might be in *novum*. It is highly probable that the Classical Association will shortly recommend *novum*, but we see no clear reason for the printing in the present series of *novom*. Some long syllables are unmarked, e.g., *instaurata* (p. 27) for *instaurata*. Apart from what has been said, the editing is well done.

English.

Heroic and Patriotic Verse. By A. Burrell. 239 pp. (Dent.) 1s. net.—We have already commented upon the Lyrical English Verse and the Shakespeare selections which have been issued as companion volumes in this well known and elegant series to this collection of Heroic and Patriotic Verse. Mr. Burrell has so done his work in grouping and selecting his material that these poems can be made use of in the comparative study of literature; and he urges the keeping of an extract book for verse of this order (we presume he would concede also, of any other order), which is a valuable suggestion for masters of upper forms to distil into the minds of their best scholars, and see if haply it will work out well. His underlying contention is that in all verse truly heroic, no line can be drawn to indicate any difference save a chronological one. "The Charge of the Light Brigade" is every whit as much heroic verse as the Greek Lament over the Dead in Thermopylae. This also is a fruitful suggestion for critical minds. Selections from the Bible and the Apocrypha are found in this volume; and Walt Whitman, to the editor's high credit, is also included; and there is no inconsiderable proportion of Shakespeare also.

Tales from Spenser. By Sophia H. Maclehorse. ix. + 167 pp. 1s. 3d. *Macaulay's Essay on Sir William Temple.* By G. A. Twentyman. xv. + 137 pp. (Macmillan.) 1s.—These additions to Messrs. Macmillan's course of English Literature for secondary schools are really surprising in their clearness and comprehensiveness, and scholarly qualities as displayed in the task of editing them, no less than for the capital selection of literary matter which they display. In the case of the former book, although so much is not distinctly stated, we suspect that Miss Maclehorse has turned these episodes from the great Spenserian poem into prose of her own; if so, we compliment her highly on the result, which is entirely suited to the purpose she has in view. Her paraphrase of these stories is telling, and will appeal strongly to the class which it is intended to benefit by the issue of this course. Besides good introductions, each volume is supplied with chronological tables, notes which are never too numerous nor too long, a useful but perhaps unnecessarily full glossary, some questions, subjects for essays and aids to further study. If we criticise Miss Maclehorse's glossary it is because we think such words as *enmity*, *fearful*, *fulsome*, *disclose*, &c., are not sufficiently archaic to be explained under this heading.

Gleanings from the Talmud. By Rev. W. Mackintosh. xvi. + 136 pp. (Swan Sonnenschein.) 2s. net.—This is a good little volume of extracts from that extraordinary mass of Rabbinical lore which is so little known to the average Englishman, the Talmud. The compiler has worked over his ground with care and with critical scholarship, and has supplied to these pages an introduction of value, popularly written yet accurate and comprehensive. The selections are divided with originality into fifteen sections, dealing with Mankind, the World and Life, Youth and Age, Fortune and Misfortune, Riches and Poverty, Wisdom and Foolishness, Labour and Trade, How Man Works and God Works, Education and Learning, Religion and Worship, Some Parables, Three Stories of Hillel, Family Life, Virtues and Vices, and Justice and Judgment. The perusal of these Jewish maxims cannot fail to have a broadening effect

on the minds of modern readers, and it is a pleasure to commend this volume, which has been provided with an index of subjects and names, and passages of Scripture, and some brief but useful notes.

Paradise Lost, Book V. By A. E. Roberts. xvi. + 82 pp. 1s. *Matthew Arnold's Sohrab and Rustum.* By W. R. Leask. v. + 40 pp. (Blackie). 2d.—These booklets respectively continue the series of the Junior School Milton and the English Classics issued by this firm. Both may be equally and highly commended. In the former, the introduction is well done, and once more we draw attention to Mr. Roberts's account of the Universe as conceived by Milton. The notes to this fifth book may almost be described as voluminous. They are certainly scholarly, at times almost too scholarly for junior school work; e.g., the note on "Song," condensing the Pythagorean doctrine of the music of the spheres, and also on the phrase "in quaternion," with its long quotation from Cicero. However, it must be conceded that Milton always demands a good deal of explaining; and it is not our wish to carp at good work. The appendix, which deals with Milton's versification, breathes Mr. Robert Bridge everywhere. The edition of "Sohrab and Rustum" is equally praiseworthy, and the selection of this poem is to be commended.

(1) *Swift's Gulliver's Travels.* 125 pp. (2) *Tales from the Arabian Nights.* 120 pp. (3) *Lamb's Adventures of Ulysses.* vi. + 112 pp. (4) *Sinbad the Sailor.* vi. + 112 pp. (5) *Kingsley's Heroes.* 132 pp. (6) *Sir Walter Raleigh's Discovery of Guiana.* 111 pp. (7) *Early Voyages to Japan.* vi. + 111 pp. Edited by Dr. W. H. D. Rouse. (Blackie.) 8d. each.—In these little booklets Dr. Rouse continues to provide literary material, some of it old, and some wonderfully fresh and original, for the purpose of supplying a unique and useful series of texts for junior schools. A glance at the titles written above is sufficient to show over what a varied extent of literature this editor has lately been working, and nobody will expect everyone of these texts to present the whole text from which it has in most cases been carefully condensed. Especial interest is given to the above selections both by the inclusion of Sir Walter Raleigh's "Discovery of Guiana," which is printed from the text of the Hakluyt Society, and is complete; and also by the reprint from "Purchas his Pilgrims," of a shortened account of Saris and Adam's adventures in the Far East, a topic which cannot fail just now to possess high interest.

The Mother Tongue. Book I. By S. L. Arnold and E. L. Kittredge (American writers). Edited by Prof. Adamson. 1-294 pp. (Ginn.) 1s. 6d.—This admirable little book, admirably edited, lays proper stress on oral composition, and is full of suggestions for the wise teacher. It is very full, and for the first book, is at the close rather advanced; but there is plenty to choose from. Its chief excellence is that it gives the children nearly all the work to do; it even suggests that they should think. We miss in Prof. Adamson's preface any reference to their training in the art of the *raconteur*, without which the composition teacher (or any teacher) is as a block of ice or as a dead log.

Selected Essays of Fielding. By G. H. Gerould. lxxxi. + 222 pp. (Ginn.) 3s.—Fielding as an essayist is as little known to the average reader, and even to some who are much better read than the average, as is Fielding the playwright; his fame as a novelist has eclipsed all other kinds of fame to which he may justly make some claim. This selection of his

essays is therefore welcome, for it is designed to draw attention to the many excellences of his style, and to the vigour and worth of his thought. The remark of the editor, that "some readers may be genuinely surprised to find these essays unexceptionable in delicacy, not unfit reading *virginibus puerisque*," will doubtless at the onset disarm much prejudice and send readers and young students to these pages with a confidence which Fielding's reputation does not always warrant. The introduction is comprehensive and covers the whole field of the great novelist's literary activity. The selection of the essays has been made with care, and the notes are splendid. A notable and original addition to a valuable series.

Chapman's Bussy d'Ambois and the Revenge of Bussy d'Ambois. By F. S. Boas. xlvi. + 332 pp. (Heath.) 2s. 6d.—Chapman's plays are not at present very well known in educational work, and to place this edition of two of them in the *Belles Lettres* series is a happy thought, and is also the first attempt to edit either of them in a manner suitable to the requirements of modern scholarship. One of the singular merits of this edition is the identification here made for the first time of a part of Bussy's dying speech with lines put by Seneca into the mouth of Hercules; and Mr. Boas has no difficulty in showing how the exploits of Chapman's hero became in the dramatist's vision those of a semi-mythical hero rather than of a contemporary Frenchman of his time. The introduction, which deals with that group of Chapman's plays which was based on the French history of his own time, is singularly interesting and lucid, and the analysis of this play is continued in it with vigour and penetration. The notes, as is now customary in this series, are remarkably good.

Defoe. By Albinia Wherry. 128 pp. (Bell.) 1s. net.—This is a carefully executed piece of work. Miss Wherry writes a style that indicates the taking of considerable pains to master her material, though a little lighter touch would have made it easier reading in some parts; moreover, she is by no means careful always to discriminate between the right use of the comma and of the semi-colon. In this, perhaps, her study of Defoe has unconsciously led her astray, for he himself was by no means consistent on this point in his practice of punctuation. Her literary judgments are, however, sound, and her account of Defoe as an author is full of charm, and is well worth pondering. A point of great interest made much of by her concerns Defoe's connection with educational reform and progress, as well as many other things in which that singular genius was much in advance of his age. May we call attention to what (on p. 48) seems a mistake in dates. If Landor appealed in 1858 for a subscription to save from want James Defoe, who a few lines lower down on the same page is said to have died on May 19th, 1857, whose is the error? Landor's or Miss Wherry's?

Elementary Lessons in English. By A. T. Bott. 1-192 pp. (Longmans.) 1s. 6d.—For those who believe in the teaching of formal grammar to young children, this book is a most satisfactory guide, being, as it is, original and, we speak as a child, fairly interesting. The verbal illustrations come from the same publishers' Literary Readers: this in itself adds a bright touch.

The Beginner's Guide to Essay Writing. By T. W. Berry. 1-56 pp. (John Heywood.) 6d.—There are many ways of teaching composition, and to those who like the outline-essay method this little book will be useful.

The York Readers. Book III. (Bell.) 1s.—Well-printed, well-illustrated and interesting to little ones.

History.

Motley's Rise of the Dutch Republic. xxix. + 732 + xvi. + 765 pp. (Dean.) 5s. net.—This is a reprint of Motley's famous book on the Netherlands, which has for its main subject the revolt of the Dutch against Philip II. of Spain, and brings the story down to the death in 1584 of his hero, William the Silent. It is prefaced by a biographical introduction from the pen of Prof. Jameson, of Chicago University. And we cannot do better than quote from this preface what is the modern opinion of Motley and his work. "The main source of his interest in the story is a generous love of liberty and the warm sympathy of an ardent and noble nature with all exhibitions of individual and national heroism." . . . "Never has any historian in the whole history of literature so united laborious scholarship with dramatic intensity." . . . But, on the other hand, "No doubt this epic sweep interfered with the due consideration of many important and interesting elements in Dutch history . . . his predilection was always rather toward the history of men than toward the history of institutions. Neither did Motley entirely escape those dangers of partiality which beset the dramatic historian. Under his hands William of Orange . . . became almost faultless; while Philip and those Netherlanders who continued to adhere to him were treated with somewhat less than justice." The reader can judge from these extracts what he may expect; an epic, not a history of the Dutch constitution, a hero, not a historical judgment. The continuation which Motley published six years later shows his advance in the historical sense. His characterisation of Philip II. when he comes to write of his death is much better, as history, than anything in this volume. We hope that the publishers will give us that continuation as soon as possible.

Aids to Accuracy. By S. Croft. ix. + 89 pp. (Murby.)—A booklet which has reached its sixth edition must "meet a felt want," and if used as the author intends, to supplement lessons, not supersede them, books of this kind are serviceable. There are genealogical tables of English sovereigns and the Buonapartes, chronological tables of varying fulness referring to English and Israelitish history, and an epitome of general geography, including an account of the English railways in rhyme. We have not tested the geography, and, indeed, it would be difficult to go wrong in such mere lists, but the history is founded on books out of date, and consequently mythical events figure among historical. Christianity is introduced (*e.g.*), *circ.* 70, Arthur opposes the Saxons *circ.* 542, the University of Oxford is founded in Alfred's reign, the first House of Commons is connected with Simon de Montfort, Canon and Civil Law are "introduced" in Stephen's reign. It is a pity such things survive.

An Introductory History of England from the Earliest Times to the Close of the Middle Ages. By C. R. L. Fletcher. xvii. + 397 pp. (Murray.) 5s.—The preface to this book contains so much self-depreciation that the task of the critic is taken from him. Mr. Fletcher thinks that English history should be "an inheritance of childhood," yet would not have it a subject of the school curriculum. He does not intend to "pour information into anyone," and therefore gives "no tables, summaries, or list of dates." Yet these would help to understand some part of his narrative as much as the excellent maps with which he provides us. He "fears it will be very easy for scholars to find many mistakes in detail." The only one we have found is that Magna Carta is signed, and though, in his resolve to be clear, he ignores differences of opinion on many points, this is rather a merit for his purpose than otherwise. It is essentially a book for the school library, and teachers might read such portions

to their pupils as cover the period of their daily lessons. Though Mr. Fletcher thinks he has but "smeared the powder with a thin layer of jam," and "owes an apology to his readers when he approaches the dreary period of the Wars of the Roses," he has thoroughly succeeded in making his history readable, not only for boys, but for their parents, too. He is specially good on the constitutional questions, and his creation of an imaginary village in mediæval England is very happy. It helps to make concrete what is generally left in the abstract. We look forward to see what he will make in future volumes of the Reformation, the Stuart struggles, and the wars of the eighteenth century.

Geography.

The British Empire. 368 pp. (Nelson.) 1s. 10d.—This book is one of a new series of Geography Readers entitled "The World and its People." The first fifty pages form an introduction to the main subject, and trace in a fairly interesting style the growth of the greatest Empire the world has known. Then follows the "geography" proper, some fifty chapters dealing in the chatty style, which seems to be the vogue amongst all books of this type to-day, with the three great divisions—west, east and south—of Greater Britain. The British Isles themselves have no part in the book; the title-page, therefore, as it stands is misleading. The book closes with a "summary" of twenty pages and a list of some 300 "pronunciations." There are plenty of pictures and some good ones. There are many maps, though all we can say of them is that some are better than others. There are few diagrams—mostly good, especially a couple of sets at the beginning of the book portraying the Empire on two scales, first with area, and secondly, with population as a base of comparison. The table of pronunciations is useful, but not altogether trustworthy; for instance, no hint is given that the final "k" of Perak and Sarawak is not pronounced, and the omissions are very many. The information is quite up-to-date—witness the notice of the new Canadian Provinces, the chapter on modern British West Africa and the general conformity with the recognised spelling of geographical names. To those who like to teach geography through a "Reader" we can commend the book; whether the subject taken in this fashion is really worth calling "geography" is beside the question. Suffice it, Nelson's "British Empire" is interesting and up-to-date, and much more accurate than most "Readers" which a pretty wide experience has brought to our notice.

A School Geography. By Charles Bird. Second edition, revised. 275 pp. (Whittaker.)—This is a capital attempt by the headmaster of Rochester Mathematical School to meet the two great difficulties of geography teaching in English schools, viz.: (i) the small amount of time allowed to the subject in most curricula, and (ii) the sheer impossibility of providing geographical experts in every school. The book is readable and interesting, and yet very far indeed from being a mere "Reader." It contains "facts" enough for examination purposes—that is, for any examination such as the boys and girls of twelve or thirteen years, for whom the author avowedly caters, would be called upon to pass—and it is withal educational. Cause and effect, the why and the wherefore, are constantly insisted upon, and without this the geography lesson of to-day is sadly out of date. We have discovered no mistakes worth mentioning, and the statistics, sparingly inserted, are unimpeachable, based as they are on such high authorities as the "Statesman's Year Book," Whitaker, and Hazell. The thumb-nail sketch-maps are not very satisfactory; they will do admirably for blackboard work and subsequent transference to the school note-books, but one looks for better work in the body of the

text-book. Here and there the spelling is antiquated, which is a pity, seeing that the subject matter is well up to date. The plan of the book is briefly: (i) Three introductory sections dealing with mathematical, physical and commercial geography; (ii) five sections treating of regional geography. Each section comprises chapters proportionate in number to the importance of the continental land mass in question, and containing, besides the ordinary narrative, lists of the towns most worth remembering, and exercises and examination questions on the contents of the chapter—altogether a work to be recommended.

Science and Technology.

Elementary Chemistry. Progressive Lessons in Experiment and Theory. Part I. By F. R. L. Wilson and G. W. Hedley. xii. + 167 pp. (Clarendon Press.) 3s.—The authors of this book are practical schoolmasters with correct ideas of the place of the text-book in scientific instruction. They realise fully that a book of clear instructions, as to what precisely the student is expected to do in the laboratory, may save the teacher much verbal exposition and economise greatly the time available for practical work. It would be difficult nowadays to produce an introductory course of practical work in chemistry greatly differing from those already in existence, and there is necessarily a decided family likeness between the present volume and others in use in secondary schools. At the same time, it may be stated with confidence that the authors have produced a satisfactory course of experimental work introductory to the study of chemistry, which teachers of the subject who are not already provided with a good laboratory manual would do well to examine. It is open to doubt whether most beginners will be able to give intelligent answers to many of the preliminary questions suggested by the authors, but these will serve at least to convince the student that the experiments suggested for his performance are quite worth his while. The book is attractively printed and illustrated by thirty-five figures.

Practical Chemistry. F. J. Cooper. 28 and 28 blank pp. (Published by the author at 22, Chapelhouse Road, Nelson.) 1s. 6d. net.—This is by no means a satisfactory guide for the beginner in chemistry. The general idea of the book, and the directions given to the student to observe and to record observations, are worthy of praise. Unfortunately, many of the exercises are either unsuitable for their purpose or incapable of yielding results of any value under the directions given. The text is also frequently marred by ill-considered terms and expressions. Lessons 7, 13, 27, 32, 38, 39 and 48 are the most faulty in these respects. There are also evidences of a want of revision in other ways. For instance, the student is directed to try the action of heat on "Substances 117—130," and to use "Solutions labelled 74—99"; he is to find a porcelain dish in the bottom drawer, a steel spatula in the top one, a bell-jar in one cupboard and a sand-bath in another. Such directions should not occur in a book for general use. It strikes one also as out of place to give directions as to the method of disposal of caps and coats, and as to the cleaning down of benches, &c. Such a book certainly cannot be suitable for general adoption until it has been subjected to a very thorough revision in competent hands.

A Primer of Explosives. By Major A. Cooper Key. xii. + 94 pp. (Macmillan.) 1s.—This primer, prepared by one of H.M. Inspectors of Explosives, will be of great service, especially to local authorities and to those who have to do with the handling of explosives, either as dealers or in connection with mining operations. The subject matter includes: (1) an introductory outline relating to general principles; (2) a description of the explosives in ordinary use; (3) a chapter containing very important observations on the practical administration of the

Explosives Act. The details given are clearly stated, and such as will be found suitable for the general reader who desires to have a knowledge of the elements of the subject. Yet the general introduction, dealing with the nature of explosion and the characters of noxious fumes arising from explosives, might, we think, have been even more fully exemplified with advantage. The comparative effects of combustion, explosion and detonation; the extremely poisonous effects of carbonic oxide, and the results of prolonged exposure to even minute quantities of this gas, are matters which can hardly be too strongly impressed on the class of readers for whom the book is intended. Nor would it have been out of place to have taken the opportunity of giving some general advice as to the rendering of first aid to persons suffering from shock and from the effects of noxious fumes.

Inductive Physics. By F. W. Armstrong. (Wells: printed by J. M. Atkins.) 10d. net.—The author of this short course of practical physics, which is similar to a course on chemistry already noticed (April, 1905), must be congratulated on limiting his instructions to details of manipulation, thus allowing the student to proceed with an experiment unbiased by a knowledge of the result he is expected to obtain. This unfortunately entails a certain amount of vagueness, making it difficult at times to follow the "complete sequence" the author claims for his course. It is hardly logical, however, to use degrees Centigrade before the thermometer has been studied and the "fixed points" of the scale ascertained. In a course including elementary mensuration, mechanics and heat, it seems strange to find no use made of squared paper for measuring areas or drawing curves. Exception must also be taken to the use of the phrase "the force in the rubber."

School Gardening. By W. E. Watkins and A. Sowman. xii. + 103 pp. (Philip.) 2s. 6d.—The Board of Education desires to encourage the introduction of school gardening into the work of elementary schools in rural districts; but before the subjects can be made of any educational or practical value many teachers will require to take lessons in gardening from farm labourers or cottagers near them. The present book should be of service in showing what and how to cultivate in the way of fruit, vegetables and flowers; and, presuming some acquaintance with the practical operations of the garden, it will enable the intelligent teacher to prove that the best results are obtained by combining science with practice. In many cases artificial fertilisers are recommended for various crops, and the proportions are those given in a well-known book on the "Chemistry of the Garden." If the authors had described experiments to illustrate the effects of phosphate, potash and nitrate upon crops of various kinds, they would have added to the value of their book for school purposes. As it is, the volume is almost entirely devoted to hints and instructions found in ordinary books on gardening, the only difference being an introduction, and a section devoted to the laying out of gardens. The remainder of the book is concerned with the usual gardening operations beginning in October and ending in September. There is no index, though in a book of this kind an index should be considered as essential.

Mathematics.

Elementary Algebra. By W. G. Borchardt. vii. + 491 + lxiii. pp. (Rivingtons.) 4s. 6d.—The book contains a complete course of what may be termed elementary algebra up to and including the binomial, exponential and logarithmic series; graphical work occupies a prominent place, and effect has been given to several changes in arrangement and method of treatment that have been recently demanded. The exercises are very numerous and varied, and the examples solved in the text

are amply sufficient for the guidance of the pupil; in these respects the book is a great advance on the text-books of our boyhood. We are not so sure that there is an equal advance in the matter of rigour of proof, even though the volume, as the preface states, is meant to "exhibit for the most part rigorous proofs, while admitting some deductions from arithmetic and geometry." The exposition is as a rule clear and succinct; at times improvement is possible. Thus in §163 it seems to be as important to state that \sqrt{x} is surd and a rational as to say merely that \sqrt{y} is surd. In §221 the theorem is not sufficiently limited; it is of course not true when the denominators b, d, f, \dots contain both positive and negative numbers. Again, in §235 the problem is "to find the limit of the sum of an infinite number of terms, when r is numerically < 1 "; it is hardly satisfactory to wind up the (too meagre) discussion by saying, "Thus $S = \frac{a}{1-r}$ (approximately)." The limit is $\frac{a}{1-r}$ without any approximation, though $\frac{a}{1-r}$ is an approximation

to the sum of n terms. The later chapters would be greatly improved by a more adequate treatment of convergence of series. In spite, however, of defects such as those just mentioned, the book has many merits and deserves the careful consideration of teachers who may be in search of a volume which shows the influence of modern methods of treatment.

Algebraical Grounding. By D. E. Shorto. 46 pp. (Rivingtons.) 1s. net.—The object of this little book is apparently to provide a teacher with the means of giving to his pupils, in as short a compass as possible, the proofs of the usual algebraic theorems, which the pupils can find in a text-book but which they will not or cannot read for themselves. We have never understood how a pupil will benefit by dictated notes who is unable or unwilling to study a text-book, though it is undoubtedly a common belief that they do so benefit; but it seems to us a misfortune that a pupil should not be taught how to use his text-book, even though the process should demand a considerable expenditure of time and labour on the part of his teacher. For teachers who require to dictate the proofs to their pupils, the book under notice will meet their needs, ranging as it does from the elementary definitions to the binomial theorem.

An Introduction to Algebra. By R. C. Bridgett. 95 pp. (Blackie.) 1s.—This little book is stated in the preface to provide a first year's course in algebra, but the course given in it differs considerably from that usually understood by the term. In the earlier chapters the meaning of the usual algebraic symbols and operations is illustrated by means of examples, solved and unsolved, but the greater part of the book treats of subjects such as proportion, interest, mixtures, areas, volumes, &c., that are usually dealt with in works on arithmetic. It is, we think, desirable that arithmetic should be generalised in this way even before formal algebra is taken up, though we also think that the time usually spent on problems in interest, mixtures and the like, is quite out of proportion to their practical or theoretical importance. The book may be of some value in furnishing examples of generalised arithmetic; it seems to us to be too meagre to be considered as a good year's course in algebra.

A Text-Book of Algebra. By A. E. Layng. Part I. viii. + 176 pp. (Blackie.) 2s. 6d.—The complete title is "A Text-Book of Algebra, embodying Graphic and other Solutions and Applications to Arithmetic and Geometry." The book is evidently the work of a teacher who knows the difficulties of the beginner, and who has set himself to remove them as far as that can be done by illustrations and precept.

The treatment is simple and appeals to the beginner not only by clearness of statement but by the number and variety of the worked examples, while attention is paid to several points that are too often ignored altogether in elementary teaching; for example, on pages 25, 63, 83, 85. The exercises for the practice of the pupil are numerous and bear out the description given in the title of the book. This first part carries the subject up to easy quadratic equations, and may be recommended as a very satisfactory book for beginners.

Model Sights. By William Hall. viii. + 133 pp. (Clive.) 2s.—The sub-title of the book is "A Synopsis of the Modern Practice of Navigation, with typical worked Examples and Exercises." It is stated in the preface that the main object in writing this work "has been to construct a book small enough for the pocket, and yet containing a model of every calculation used in sights." So far as we can judge, the book is admirably adapted not merely for preparing candidates for examinations but for use in actual practice.

The Primary Arithmetic. Part I. Edited by Wm. Briggs. 80 pp. (University Tutorial Press.) 6d.—The four simple rules and the compound rules involved sums of money not exceeding £100. The book consists mainly of sets of exercises which seem to be well graded and in many cases demand something more than the mere application of a rule.

The "Council" Arithmetic for Schools. Scheme B, Part VII. By T. B. Ellery. 333-396 pp. (Black.) Paper covers, 4d.; cloth, 6d.—Takes up proportion, fractions (continuation of previous work), percentages, profit and loss, averages, investments of savings (comprising stocks and shares, &c.). Several miscellaneous exercises are also included, while on the cover various tables are printed which contain information not always to be found in text-books.

Macmillan's Picture Arithmetic. Book III. 47 pp. (Macmillan.) Paper covers, 3d.—An attractively arranged series of exercises on the compound rules. The pictures open up the possibility not only of relieving the tedium of a lesson but of suggesting to the pupil many interesting questions about modern industries.

Oliver and Boyd's New Number Exercises. Books I., III.-V. (Oliver and Boyd.)—Each book is designed to provide work for one year for the clever pupil, for two years for the dull; the recent tendency to discard complicated examples is manifest throughout, and the general arrangement seems satisfactory. The books contain from 32 pages (Book I.), to 72 pages (Book V.), and the prices for the books in paper covers range from 2d. to 4d.

Quick Calculator. By R. Klein. (Routledge.) 2s. 6d. net.—The set of tables of which this book consists is designed to facilitate the quick reduction of all sorts of prices, rates of freight, custom-duties, as well as other charges from any one into any other of the different systems of currency and weight contained in the book. The tables are adapted to transactions between the principal European and American States, and, as they are arranged in a very simple manner, should be of great service to business men; they may also be useful to teachers on the commercial side of a school.

Miscellaneous.

Principles and Methods of Industrial Peace. By A. C. Pigou. xx. + 240 pp. (Macmillan.) 3s. 6d. net.—Economic rent is determined with comparative ease. The difficulties which have arisen between landlord and tenant in Ireland and elsewhere belong to other domains of social forces than pure economics.

But the relations between capital and labour, the distribution between these of what is left of the product, or its equivalents, when rent has been paid, are by no means easy of adjustment. The share which is to go to wages and to interest respectively depends not only on their mutual demand and supply, but on countless other desires which go to make the whole man, so that in these days of great combinations both of capital and labour there has arisen a state which may fairly be described as one of war. This condition can be paralleled in many of its features to the international relationship of European States in the eighteenth century, even to armed conflicts, to truces, to treaties, to arbitration, &c., &c. In this little book, Mr. Pigou treats of the whole matter with masterly skill. After a glance at the "background of history" and at the "advantages of industrial peace," he works out at length in four chapters the principles which should govern the determination of wages, and in a short chapter (the slightest part of the book) those which should govern the share of employers and workmen in the management of a business. The second half of the book is concerned with the methods which have been or may be adopted to end strife, and their respective advantages and disadvantages. Two appendices treat in the mathematical way, which was proposed many years ago by Prof. Marshall of Cambridge, with some of the more difficult problems. Mr. Pigou's sources are previous books on his specific subject, and many reports on economic questions in England, America and other countries. The whole is treated with judicious calmness, with intimate knowledge, and a full inclusion of the various factors which must be borne in mind in coming to a decision on the merits of various policies. How far peace is possible, by what various means in various circumstances it may be attained, we leave to our readers to discover from the book itself.

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 Position of Teachers in Natal.

YOUR readers may be glad of a warning against accepting appointments under the Education Department of Natal. The rate of pay has now been reduced to £180 per annum, for all first-class elementary teachers, and £225 for assistants in secondary Schools. While Mr. Barnett was Superintendent of Education the maximum for these appointments was raised to £350 per annum and £500 per annum respectively, but there is no certainty that this scale will be maintained and considerable probability that it will be reduced. Promotion is very slow. At the end of each *six years'* completed service, schoolmasters can obtain six weeks' leave on full, or three months' leave on half-pay. At the end of thirty years' service, the teacher gets pensioned at the rate of $\frac{1}{10}$ th of his average salary for the previous three years for each completed year's service. Towards this pension he pays £3 per centum every year (*i.e.*, rather more than the actuarial value of the pension). At the present time every teacher's salary is subject to an annual deduction of—

- (a) Ten per cent. (Special tax on all Civil Servants.)
- (b) Three per cent. (Pension Fund.)
- (c) £1. (Poll tax on all Europeans.)

The cost of a bedroom and boarding-house food varies from £7-£9 per month. A suit of clothes costs £5 5s., and other incidental expenses amount to about double what they would

in England. Of course, this is for a bachelor. In the case of a married man, the rent of a four-roomed cottage is about £72 per annum. White servants cannot be obtained. A Kaffir boy expects £24 to £36 a year and his food. He won't work after six o'clock in the evening and can seldom cook, so the school-master's wife must be prepared to be cook, housemaid and parlour-maid in one. Calculated roughly, and including holidays, which are very expensive, an income of £200 a year in Natal is equal to rather less than £90 a year in England. A resident master in an English school at £75 per annum is distinctly better off.

If any one of your readers applies for a post in Natal after reading this, he does so with his eyes open, but I may add finally, that in such a case he would be well advised to insert in his agreement a clause by which he shall not be subject to dismissal for insisting on the due fulfilment of the terms of his agreement. All those teachers whose three years' agreement has not yet expired have been given the choice of accepting a reduction in the amount which the Government contracted to pay them, or *being dismissed the service at the expiry of the three years*. Comment would be superfluous.

By comparison the condition of affairs in Cape Colony and the Transvaal is considerably, and in the O. R. C. very much better.

A NATAL TEACHER.

[Although our correspondent somewhat overstates his case, there is much reason to fear that in the main his statements are accurate. We understand that the deduction from Civil Service salaries is $\frac{1}{11}$, not 10 per cent., and that £200 in Natal is about equal to £150 per annum in England.—EDITORS.]

The Teaching of Modern Languages.

I HAVE read with much interest the various letters and articles which have appeared recently on the modern language question, and from which I gather that there is something of a reaction against the fervid idealism of some time ago. Those teachers who are once more reverting to the old are climbing down gracefully with an encouraging word of praise for this or that feature of the reformed method. Mr. Siepmann, who writes strongly against ungrammatical methods, clings to phonetics, which he wishes to be taught simultaneously with grammar in the early stages. As this is impossible, we are led to suppose that he really cares very little for phonetics, since we know he believes firmly in grammar. Phonetics, for instance, makes little or no distinction between *parler*, *parlé*, *parlez*, *parlais*, *parlait*, *parlaient*, *parlai* (phoneticists are not agreed whether to write *parler* as *parie* or *parle*), while grammatically any of these words wrongly used is a blunder of the worst kind. Moreover, in this country, the end and aim of instruction is to obtain examination results, however galling this form of teaching may seem to those inspired teachers whose soaring ideals are cramped by it; and these results cannot be done without cultivating the intelligence and grammatical knowledge of the candidates.

The inculcation of the meanings of words by means of pictures has no advantages over instruction through the medium of English, except in so far as a picture may arouse a certain interest. Free composition merely teaches a boy to avoid difficulties, and to translate from the bad English which lies in his own mind, rather than from the good English of a set piece. For the English (such as it is) exists already in the child's mind, and to proceed as if there were no such thing is to ignore the guiding principle of the child's linguistic reasoning. Abroad (I am told) things are different. Any German boy of fourteen (I am assured by a German) on leaving school *knows* English, French and Latin; but before we aspire to such an ideal in this country we need a definition of the word *knows*. I recently

read an article on instruction at the Sorbonne, in which we were told that in studying English everything was done in that language, and that to such a state of perfection had things been brought that it was difficult to tell the nationality of the students. Fired with this idea, I attended a lecture at the Sorbonne on English literature. A play of Congreve's was the subject. To my surprise, everything was said in French, and the lecturer (a man of considerable distinction) did no more than occasionally read a sentence or two from the play. His accent was undoubtedly good, but he persistently pronounced the word *watch* to rhyme with *match*, which in our country would be considered a bad blunder. I had no opportunity of hearing the English of the students.

It is frequently alleged against teachers of modern languages that children, after learning French for five or six years or more, are unable to read a novel, write a letter, or say a simple sentence in that language correctly; I fail to see why such a state of things is any reproach to teachers of French. We constantly have numbers of boys who have passed through long courses of Latin or Greek and cannot construe a sentence, of boys who have for years studied mathematics and cannot do a rule of three sum; why, therefore, should the standard of modern languages be higher, with far less time devoted to the subject? Of course it is not true that all boys who have studied Latin, Greek or mathematics are ignorant of these subjects, but neither is it true of all those who have been taught French or German. Take any method you will, and the majority will remain more or less ignorant; no imputation on the efficiency of the old method is less to the point than its condemnation on the ground of the lack of satisfactory results. We are, however, all grateful to the reformers for the suppression of the study of remote grammatical peculiarities, and, with the elimination of this serious obstacle, no doubt good progress will be made in the teaching of modern languages.

Bradford Grammar School.

G. BRACKENBURY.

Use of the Words "Mass" and "Weight."

THE term "mass" figures so largely in even very elementary courses of experimental science that it seems desirable to call attention to the usually bogus use of it.

It seems to be generally believed that something of scientific importance to young students is conveyed by the usual quotation from the "Principia"—"the mass of a body is the quantity of matter in it."

Now this might not be open to much objection if the term were only used when *one* substance alone is under consideration. The mass can in this case be used as a measure of the quantity of that substance. It happens, however, that the term is most extensively paraded during the study of "density," and a comparison of *different* substances is an essential feature of the idea of density.

From the imagined definition of "mass" referred to, we then get absurdities like the following:—The quantity of matter in a c.cm. of lead is greater than that in a c.cm. of iron—a statement absolutely without meaning.

Notwithstanding this, the student is persuaded to believe that he has acquired a good notion of mass, even as applied to the comparison of different substances, and sometimes his credulity is still further exploited; he is seriously told that the "particles of matter" are pressed together more closely in the lead than in the iron! Of course, we do not know what future work on the constitution of matter may teach us in this connection, but, when introduced into an elementary scheme of experimental science, this last statement appears to be an unnecessary and ridiculous hypothesis.

For the purpose of simple practical work, it should suffice to define density as the *weight* of unit volume. The orthodox

definition merely gives rise to simulation of knowledge and to much ambiguity.

The variation in the weight of a body while the amount of matter in it remains unaltered can easily be made intelligible, but the use of the word "mass" here does not assist the explanation. If it is objected that this variation vitiates the introduction of "weight" into a working definition of density, it may be pointed out that students do not use a delicate spring-balance during balloon voyages in making determinations of density.

Finally, if the idea of mass must be taught at a very early stage, by all means let us teach it, not juggle with it. A little excursion into dynamics is necessary, and it is generally supposed that dynamics worries young students too much. It is possible, however, with comparatively little trouble, to impart sufficient dynamical notions to enable them to grasp the idea of mass. Many simple illustrations may be found for the purpose.

Everyone engaged in teaching practical science will be accustomed to the apparently confident use of the term by many who really do not know what it means; and this use (or abuse) is encouraged by the insertion of the word in syllabuses of elementary work, when the authors usually appear to be satisfied with the familiar classical quotation.

Ulverston.

T. J. GARDNER.

French Coins and Plays.

IN the January number of THE SCHOOL WORLD, II. H. W. enquired where he could obtain in quantity cardboard models of French coins for use in class.

During the holidays I have made the same enquiries in France. The answer is not satisfactory. Actual coins are used in the schools, or paper or cardboard charts, such as "Tableau des monnaies françaises représentées en grandeur naturelle" (Librairie Hachette & Cie., 79, Boulevard S. Germaine, Paris), or a Jeu de Poste (Maison du Cotillon, Rue de Rivoli, Paris). Post-cards of the coins of different countries are now to be had; the coins are full size and in relief; but none of these methods are cheap enough to afford large "quantity for use in class."

Can anyone tell me where to find short French plays for small classes? The language colloquial and idiomatic, in fairly short sentences, but in subject matter not too juvenile for girls of fifteen years of age, who are beginners.

E. M. G.

Havercroft, Worthing.

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SIXPENCE.

THE SUPPLY OF TEACHERS.

By Prof. J. W. ADAMSON, B.A.

Professor of Education, King's College, London.

WITH the readiness to employ the superlative which is a mark of public utterances to-day, the existing defect in the supply of teachers has come to be spoken of as a "dearth." The use of the term is, of course, an exaggeration; but still the shortage in London elementary schools particularly has reached the stage of great inconvenience, and threatens shortly to become a very serious embarrassment to the authorities. The causes of this state of affairs appear to be neither few nor of a kind which can be easily or speedily remedied.

Not school teaching alone, but all occupations which demand at least a modest intellectual equipment, and return a very much less than modest remuneration, are suffering from a lack of candidates, as everybody knows. The disparity between the demand and the supply of candidates for Holy Orders, the disinclination of men to come forward in sufficient numbers to fill posts in Universities and University Colleges, are cases in point. Either the altruists who have hitherto undertaken such public duties are decreasing in number, or they are no longer sufficient to meet the increased demand. In a commercial age it is only to be expected that the more able and intellectual will turn in greater numbers to commerce and its off-shoots for the means of livelihood and the hope of wealth, while the growth of luxury must tend to diminish the number of those who are satisfied with simpler conditions of life. Teaching, in short, is one of the insufficiently remunerative occupations which compete with difficulty against the prizes now offered by "business" to its devotees.

But amongst these occupations, school teaching suffers from peculiar disabilities. The platform speaker notwithstanding, it has not yet attained to general recognition as a profession having a duly constituted membership and well-knit branches. Regarded either as a whole, or in any one of its separate fields, primary, secondary, technical, it includes an entirely disproportionate number of

persons very poorly qualified for their work, and probably a higher percentage of the unqualified than is the case in most occupations; yet these ineffectives are all "on the strength." A profession is esteemed according to the standing of its weakest members, whenever these are numerous enough to attract attention to themselves.

To the more general causes which tend to put teaching under a cloud, the elementary teacher to-day believes himself compelled to add a feeling of uneasiness with reference to his own future. He distrusts the intentions of those in authority. The motive of the recent changes in the training colleges which the Board of Education has effected has not been perceived, and the teacher sees in those changes evidence of a desire to discriminate against himself on the lines of social cleavage, to deny the solidarity of the teaching profession, and to confine him within very strictly defined limits. This belief is, no doubt, based upon a mistake, but it is none the less operative. On all these grounds, general and particular, boys are dissuaded from offering themselves as pupil-teachers.

As has been said, the so-called dearth is felt acutely in the elementary schools of London, where, however, it is no novelty. The last years of the School Board saw the beginning of the shortage, which indeed was partly a consequence of the Board's own practice. With the altogether laudable intention of equipping its junior teachers thoroughly for their work in the schools, the Board instituted all sorts of classes for the benefit of those who entered its service as assistant-masters and mistresses; at one time or another there were facilities for learning systems of physical training, hand and eye training, vocal music, drawing, elementary science, kindergarten method, &c. The classes were held in the evening, attendance often involving a long journey from home; in practice, membership of several such classes, irrespective of personal aptitudes and tastes, was compulsory upon all young but fully certificated teachers employed by the Board, with the obligation to gain certificates of proficiency in the subjects of study before attendance would be excused. In quite its last days the Board was forced by a shortage in teachers to recognise how unpopular those requirements made its service, and the com-

pulsion was removed. But their effect has not yet passed away, and the odium they aroused keeps men and women from the service of the County Council.

For many years past the educational authorities of London have suffered in this matter of the supply of teachers from the serious competition of the small suburban educational areas adjacent to the London boundary. The former have always incurred great expense in maintaining pupil-teacher centres, classes such as those just specified, and other agencies for training teachers. The suburban authorities having no such heavy drain upon their establishment charges, were able to offer salaries sufficiently in advance of those paid in London to attract men and women from its service; while the London School Board was not successful in convincing its assistant-teachers that that service afforded a career for all able servants. The difficulty caused by the difference of salary is the greater to-day, since the London County Council is spending very much more on the training of teachers than did its predecessor, the attraction to the suburbs remaining as before. It ought not to be impossible, however, to make a career more assured under the London County Council than under the Puddleford U.D.C.

It was just this doubt of the *carrière ouverte aux talents* which detracted from the *prestige* of service under the London School Board. Once at least in its history, the Board made a parade of instituting a system of promotion; but little came of it, and in the end the system itself was abrogated.

If the foregoing at all approximates to a just diagnosis, it is clear that remedies are not easy to find and even less easy of immediate application. Mere alleviation will not do; to swamp the schools with a body of teachers sufficient alone numerically, but altogether inferior in quality, is to intensify an evil which is itself a contributory cause to the "dearth" of teachers. If, to meet the existing condition, any considerable number of men and women imperfectly qualified as teachers should be accepted for work in the schools, the provisional and unsatisfactory character of the measure ought to be present to the minds of all concerned, and persons so engaged should be given to understand that those of them who take no steps in the meantime to reach a higher standing will, by mere efflux of time, cease to be qualified to serve after a stated period has elapsed. The entry into the schools of the large number of men and women now being trained by the London County Council would make such a policy feasible.

The employment of women as teachers for the youngest pupils in boys' schools is a partial remedy which cannot be praised without reserve. While the success of women-teachers in dealing with quite young boys may be freely admitted, it must be insisted that men should be entrusted with the instruction and education of boys above the age of, let us say, ten. The number of women-teachers employed in boys' schools has grown rapidly of late, and in schools not exclusively elementary; the fact calls for the attention of

administrators, unless, indeed, we are careless of drifting into the condition which holds in America, where "teacher" implies a lady, almost as matter of course. Whether those observers are right who think that a certain lack of virility in the American school-boy is due to the influence of his feminine teachers, it seems certain that the present is not the time in which English boys may safely dispense with the more austere discipline. In any case, this particular plan will not fill the existing vacancies in the staffs of girls' schools.

The most effective means of meeting the dearth of teachers will be found in the measures which raise the occupation of teaching in general esteem and so insure a steady flow of capable recruits. A strong profession, to which flagrant incompetence cannot secure admission, is the best guarantee for the maintenance of an adequate supply of aspirants. Teaching will not occupy that position whilst so many of its exponents are unsuited to their work, or whilst the unity of the profession is hindered by the erection of artificial barriers between classes of teachers. A profession cut up into sections between whom mutual esteem is wanting can never be the strong profession which the public interest requires.

Perhaps the most obvious remedy for a shortage of teachers is an increase in the teacher's stipend. But the experience of London at this moment shows that the salary question is only one factor of the problem and in itself not an absolute determinant. The scale of salaries in the elementary schools of the London County Council has been only recently revised, and the consequent increase in pay has brought the maximum salary of the assistant-teachers to a level above that of their colleagues in many secondary schools. Both the ratepayer and the councillor will probably insist that this particular settlement shall be regarded for at least some years to come as final. Yet the "dearth" remains.

The truth is that the question of salary is involved in a greater, which may be summed up in the one word, promotion, understanding by the term the possibility of a career held out to men with whom their profession is, after all, the means of livelihood. Promotion must be reasonably within the reach of all who are fit to be promoted, and the number of "stranded subalterns" capable of better things should be as small as arrangement can contrive. The problem which the London School Board failed to solve is the problem which to-day confronts the Education Committee of the London County Council; while it remains unsolved London will suffer from a shortage of teachers.

To attract men in search of a career, a system of promotion ought to be based upon principles easily understood, the machinery itself should not be complicated, and the motive power should originate in circles not exclusively official; and both its principles and administration should be well understood by those who aspire to promotion. The system may be worked from the centre, which was the method attempted without success by the

School Board; or the machinery may be divided and distributed over London. On the first plan either the whole thing is entirely in the hands of officials, or else few principles, many hard-and-fast rules as to seniority, certificates, statistics, and so forth, with the co-operation of inspectors already overworked, are the mainstay of a small sub-committee charged with the giving of preferment. If the inspector were as familiar with the *personnel* of his district as the name of his office seems to imply, the human element would be less likely to get squeezed out of such a machine; though, even so, preferment would most often be governed by the impersonal "rules" of the committee's procedure. But the inspector in a huge, centrally controlled body easily tends to become a bureaucrat; and the time he must give to penning "reports" and to other purely clerical labour necessarily hinders a really intimate knowledge of the schools and teachers within his district. The failure of the London School Board in these circumstances was hardly avoidable.

There would seem to be more hope of success if the Education Committee, while retaining a veto on all appointments, and while laying down the principles (not rules) governing promotion, would delegate to local bodies of managers, assisted by the inspector, the actual selection of men and women for preferment. Local knowledge would ensure that competent teachers were not passed over on account of some technical and relatively unimportant flaw in their qualifications; teachers would be appointed because of their special fitness for work in a particular school; good workers in the slums would not for ever labour there unpromoted because something or other was ninety per cent. when it should have been ninety-two at least. Good service outside London should remain a reason for employment within the London area; but, other things being equal, good service in London should constitute a predominant reason for promotion there. The relation of central and local educational authorities involved in such a scheme would be extended to other matters with advantage to education, as the history of the late School Board teaches.

Moreover, the present position of head teachers (be it observed, they are not headmasters or head-mistresses) is scarcely one which satisfies able men and women. Mere quill-driving fills too many hours; in a London elementary school the work of the junior clerk is done by the manager—if a most unbusiness-like practice may be described in the language of business. Supervision by all kinds of inspectors is over done, and the teacher's freedom of initiative, and even of action, is correspondingly fettered. Capable persons once selected and made real heads of their schools, they should be made responsible for the schools' success; and to that end they need a freedom which is not theirs at present.

Whatever lines administration may pursue, a satisfactory supply of teachers for London can only be maintained by the institution of a career for teachers in London schools. Careful organisa-

tion which prevents the overlapping of the activities of two classes of school would do much to economise teaching-power, and so afford some relief in the present scarcity. But, when all is said, the only reasonable ground on which to base the expectation of a continued supply of teachers consists in the attraction that teaching and its rewards or compensations exercise upon fitting persons. To ensure that attraction is a task for the administration not merely local nor temporary. That England stands greatly in need of knowledge and of the services of those competent to impart it is a thesis which has been maintained pretty frequently of late; it is a conviction firmly rooted in the minds of many who are conversant with educational practice at home and abroad.

NATURE STUDY IN WINTER.

By F. W. HEADLEY, M.A.
Haileybury College.

IS there any form of outdoor nature-study that is possible in the depth of winter when the late autumn flowers have gone and the firstlings of the spring are still biding their time beneath the ground? In the warmer parts of England such a time is hardly to be found if the winter is a mild one. And there is no time of the year at which there are no birds worth observing. But, no doubt, the outdoor botanist often finds but a small field for his energies in winter and lies dormant, like many of the plants to which he is devoted. Still there is no reason for a complete cessation of activity. It is well to know plants in every stage. Many people who are familiar with all the common British trees when their leaves are on them are perplexed when they stand stripped and bare, and fail to name some not uncommon ones correctly. They might, therefore, with advantage study trees in their winter garb or winter nakedness. The camera will be a useful help to them; it will enable them to know trees by their general appearance and mode of growth. At closer quarters it will depict the rugged beauty of the bark.

Wherever ponds, however small, are found there is a field of study that is almost inexhaustible even in winter. In British ponds is almost always found *Daphnia*, the so-called water-flea, which is so transparent that under the microscope its gills can be seen moving, its heart beating, its small bands of muscle and its brain can be made out without difficulty. The Cyclops, too, is almost everywhere common, and *Chydorus*, another minute crustacean, is to be met with even in December. When the snow is on the ground those three very interesting animals, *Daphnia*, Cyclops, *Chydorus*, may be caught and studied to great profit by anyone who will provide himself with a small collecting-net, a microscope and a compressorium.¹

Rotifers are a great source of interest; they

¹ Merss. Baker, 244, High Holborn, supply all the apparatus required.

belong to the Trochelminthes and are perhaps the most beautiful of that huge and miscellaneous assemblage, the vermes or worms. For some years I have kept a record of the rotifers and the other principal forms of life in the ponds near Haileybury, and I find that, though rotifers get scarce, both in point of species and individuals, in November and December and generally still scarcer in January and February, they never reach the vanishing point. Sometimes in December I have obtained five species from one pond in a couple of hauls, and some of the five species could boast of a fair number of individuals. With the help of Hudson and Gosse's monograph, the rotifers may be studied with much profit, or even with the help of a general text-book only, such as Parker and Haswell's "Zoology."

There is never a time when infusorians are not well represented in our ponds. Paramœcium, the most generally studied, perhaps, of all this class of animals, is never wanting. Englena is often to be found in winter. *Volvox globator*, claimed both by the animal and the vegetable kingdoms—and a marvellous organism whatever the ultimate decision may be—I have recorded for December and again for January and February. In February it has sometimes been plentiful, and, no doubt, if a really thorough search could be made on some December or January day, the waters of our small ponds would be found to contain far more rotifers and infusorians than I have as yet been able to find there in the winter time; but the numbers of many of them being reduced, they escape notice.¹

While talking of pond life I may remark that much is to be learnt by keeping an aquarium. An axolotl, for instance, is easy to maintain in health; earthworms content him. In the matter of breathing he represents the amphibians in both their stages. Tadpole and frog in one, he has gills for the water and lungs in reserve, should the water dry up. Common goldfish also, usually regarded as merely ornamental, are very instructive from a physiological point of view. If their water is becoming exhausted of its oxygen, they will rise to the surface and take an occasional nip of air, thus suggesting the climbing perch, who, when his pond dries up, walks over dry land to another—his gills being so constructed that they remain moist for a considerable time, though he is no longer in the water—or even making us think of the Dipnoi, those wonderful fish that have converted their swim-bladder into lungs, of which they avail themselves when a period of drought compels them to bury themselves in the mud and become "air breathers." Even the common stickleback or the minnow may enable us to see with our own eyes what many have only read about. Take one out of the water and lay it on a glass slide, examine the tail fin under the microscope—sticklebacks will lie still for half a minute—the blood may be seen coursing through the little arteries and veins, the two being easily distinguishable. The blood corpuscles jostle

one another as they hurry along. Replaced in the water our stickleback swims cheerfully away.

Zoology, with marine zoology left out, is almost the play of "Hamlet" without Hamlet himself. The common starfish, the best known of the numerous echinoderms, has no ally in fresh water. There is no freshwater jellyfish, except in some of the great African lakes, and there only one species. Ascidians are limited to the sea, as their English name, seasquirts, implies. The right plan is to go to one of the marine biological stations on our coast, see the process of dredging up the specimens—or, better still, get a boat and a dredge and manage it for oneself—then examine the catch in a laboratory with the assistance of proper apparatus. If this is out of the question, it is still worth while to obtain such common marine animals as starfish, sea-urchins, medusæ (jellyfish), hydroids, anemones, ascidians, and dissect them. Though the specimens are dead, the question of their movement and their life need never be lost sight of. The starfish has at the end of his rays the eyespots with which he peers dimly into his waterworld. He has all along the underside of each ray rows of tube feet, which he fills with water so as to make them protrude, and with their help he moves at his very moderate pace. The sea-urchin is his near kinsman in disguise; radiate like the starfish, he has also his tube feet, which he protrudes through small holes in his shell. And how does he grow being enclosed in a hard, lifeless shell? Does he shed his shell as a lobster sheds his? Not at all. It is formed of a number of plates, and these plates are enlarged by fresh deposits of calcareous matter at the edges; and so the sea-urchin never moves house.

Many medusæ have alternating generations when they appear as plant-like structures—plant-like if you take only a bird's-eye view. These hydroids throw off buds which are free swimming medusæ and from them, by sexual reproduction, spring new hydroids. To the medusæ and the hydroids are related the anemones and the corals, too wide a world to survey now. The ascidians or seasquirts are of great interest to the student of evolution. In the earliest stage they possess notochords (rudiments of backbones), and, save in a small minority, these notochords disappear entirely and the seasquirt anchors and settles down to a sedentary life, sweeping in seawater with what microscopic food it may contain and through another aperture sweeping it out again. They supply one of the best examples of degeneration, that tendency that plays so large a part in evolution as soon as the stringency with which natural selection acts is reduced. Of ascidians, medusæ, hydroids, anemones, echinoderms, specimens can be obtained at a very moderate price from the Marine Laboratories, at Plymouth, Port Erin, or Millport. The investigator may learn much from them, and, possibly, it will lead to his dredging and getting his specimens for himself.

The ornithologist, as I have said, is never without occupation. We have many resident birds, and hard weather brings a number of immigrants.

¹ If there are no ponds near, all the common freshwater microscopic animals may be obtained from Mr. Bolton, 25, Balsall Heath Road, Birmingham.

But besides this outdoor work there is much that he may do in a museum. He can, for instance, study side by side and mentally photograph half-a-dozen birds of prey, till he gets to distinguish them easily. In England we have often about us only the kestrel and the sparrowhawk. When another hawk comes in to puzzle us, we may be at a loss unless we have an accurate and dependable knowledge of them. The feathers of birds, especially the great flight feathers, their barbs, barbules and barbicels (the last being those wonderful hooklets that fasten the barbs together and make them impervious to air) are worthy of minute study under the microscope. The plumage of the humming birds and others is interesting from a different point of view. Though the feathers contain no pigment, yet the minute structure of the horny substance so breaks up the light that it shows iridescent colours in the order of the spectrum, though no one feather shows more than half the series. The breastbones of birds—every museum should have a number of typical ones—tell us much of the habits of birds. Those that fly with a long stroke, *e.g.*, ducks, have long sterna; those that take short strokes, *e.g.*, gulls, have short ones; but to make up for want of length, they are deep. The long sternum means a long muscle and a long contraction and consequently a long wingstroke; the short deep sternum, a short strong stroke. Such things are more likely to be remembered if typical examples are selected and drawn. Indeed, wherever it is possible, notes should be accompanied with illustrative figures.

In a museum small points may be made out that are too minute for the outdoor naturalist. For instance, the hind toe of the Kittiwake Gull bears no nail, a small but safe recognition mark. The gannet, the heron, the nightjar, birds by no means nearly related, have the nail of the middle toe serrated. Small points such as this come out when birds are carefully examined, and set us thinking.

We turn now to the mammals in our museum, and find no less to observe and think about. In a small museum where is no room for large skeletons there should be the skeletons of a horse's fore and hind legs. Each bears a single toe, and the power of a single toe to bear the horse's whole weight is put to the test in galloping. The feet of the ass and the zebra are practically the same. The horse's more distant relations, the tapir and the rhinoceros, have a big middle toe like the horse, but they have also side toes which are still operative. The horse has, to remind us that his foot was not always so abnormal, what the vets call splint bones, really the metacarpal and metatarsal bones, which formerly supported the second and fourth digits. A good small museum should have a model of hipparion's foot. Hipparion retained two toes, one on each side, though they had become useless. The cattle and the deer have two vestigial digits easily recognisable, hanging useless to right and left of their feet.

A museum should have a stag's antlers with

the "velvet" on. Each year the stag grows a new pair. Underneath the "velvet" are plentiful bloodvessels. From the life-stream that courses through them spring these wonderful branching antlers. There should also be in series the antlers of a stag's first six years or more, showing how a new tyne is added each year. There is great variability in most secondary sexual characters. In antlers it is most remarkable. In a noble pair once carried by a wapiti deer the tynes on either side do not correspond in any particular branch either in size or shape. But when the whole number are counted up they total fourteen on either side. This symmetry, in spite of variability, is very strange. There are, of course, some specimens of antelopes' horns in the museum. The antelope, unlike the stag, has only one pair of horns for life. Another noticeable difference is that in many species the female antelope bears horns. In only one species, the reindeer, does the female deer carry antlers. Is the absence of antlers in the female due to the fact they have to be renewed each year? The physiological strain involved is considerable, and the bearing of offspring also puts no slight strain on the organism. Would not the two prove excessive? But why this strange exception, the reindeer?

I will now mention some big problems that can be studied even in a small biological museum. First, convergent evolution. How like the ostrich's leg is to the horse's leg! Only one toe remains in use in the bird and in the mammal, for the second toe of the ostrich bears no nail and does very little work. In the bird and in the mammal the metatarsal is enormously long and the ankle joint is high above the ground. The breast-bone of the mole has a keel suggestive of the keel of a bird's breast-bone. The mole requires strength in the fore limb no less than the bird requires, therefore a large surface for the muscles that move the fore limb. Hence the keel in either case. The teeth of the Tasmanian Devil, a marsupial, mimic those of the great carnivora. The heart of a bird has four chambers like that of a mammal. The great difference lies in the valve between auricle and ventricle on the right-hand side. Probably the fourth chamber was developed after the bird and mammal stocks separated. If this is so, I have now mentioned three examples of like structural characters developed independently—examples, in fact, of convergent evolution. Take now the subject of vestiges, often, though hardly correctly, called rudiments. Vestiges are an undoubted fact. When we come to discuss the origin of them, interesting problems open up. The Apteryx has vestiges of wings; the young Ornithorhynchus, vestiges of teeth. I have already mentioned the vestigial metatarsal and metacarpal bones of the horse. The skeleton of the python shows vestiges of hind legs.

The question of variability in wild animals is fertile in interest. If wild birds are examined carefully it will often be found that their bilateral symmetry is not exact. The ribs of the ostrich in this connection are worth observation. Often

it will be found that of two opposite ribs one bears an uncinat process, the other has none. I have a Reed Bunting and a Pied Wagtail, whose breast-markings are conspicuously unsymmetrical. This tendency to lopsidedness, unless constantly corrected by natural selection, may go to great lengths, as we may see from the fact that one of the snake's lungs has been reduced almost to a vestige; in mammals the right aorta has quite disappeared, in birds the left, though a vestige of it is occasionally found. In the teeth of mammals variations are not unfrequent, and they may be studied in a museum that has a fair number of skulls with Thomes's "Dental Anatomy" for a guide, the domestic animals showing more tendency to vary than the wild ones.

I have now made it clear to any reader who may hitherto have thought that a museum was a place for show and sight-seeing that it is really a place for work and genuine nature study. Let him draw and make notes, and he will not find that he can "do" even a very small museum in half an hour. In conclusion, I may remark that there must be something wrong if a student of nature finds little to occupy him in the winter.

BLACKBOARDS AND BLACKBOARD SURFACES.

By J. W. JARVIS.

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A GOOD story is told of an idle tutor, in one of our colleges in the early 'sixties, who seized every excuse for escaping from delivering his lectures. Coming into the room one day, he looked round and about the blackboard and then exclaimed testily, "What, no duster! Then I won't lecture." And off he walked. His successor was a more energetic man, and when the duster was not available, used his gown.

The construction of this piece of school apparatus is generally left to the architect or school furnisher, and the teacher is called upon to accept it in very much the same spirit as one man is called upon to accept and purchase another man's furniture in his college room. We make the best of it and adapt it as well as we can and go on doing our duty. However, all class-rooms have a blackboard. Sometimes it is fixed flat on the wall behind the teacher's desk; sometimes it is supported by an easel on the right or left of the class according to the available floor-space. The board is generally made of wood, well-seasoned pine is the best, and it is planed to a smooth and regular surface and covered with a dull or dead black composition upon which white chalk will mark. Owing to the size of these blackboards, which vary from 2 ft. 6 in. by 2 ft. to 5 ft. or 6 ft. by 7 ft., several planks have to be used. These are carefully tongued and grooved, and considerable skill and ingenuity are shown in joining them together to present a level surface. If the planks are not equally seasoned, contractions set in and a

crack runs across the board which renders it, if not quite unusable, certainly a nuisance to the teacher. This cracking is a drawback to boards fixed on a wall, especially if they are near radiators or hot-water pipes. The latest development of wall blackboards is in the form of an erection like a window frame, the boards correspond to the two window sashes and the whole is fixed against the wall. When one sash is pushed up the other comes down, and so the teacher has at his disposal a surface which reaches to the top of the room, but which can be easily lowered to suit his convenience for writing. The wheels and cords work smoothly, a gentle effort is all that is needed, as one sash counterbalances the other, and upon one board may be put information of a more permanent nature, while the other serves for illustrative purposes or for notes made in the course of a particular lesson. If the light in the room comes from one side only (as in the case of class-rooms from central halls), this is an excellent arrangement and the teacher is put to a minimum of trouble. This sliding wall-blackboard, with pitch-pine varnished casings, works out at 4s. a square foot in London; that is, a frame and two blackboards, each 5 ft. by 3½ ft., costs £7. Should there be a cross light it is necessary to adjust the board to such an angle that the pupils can see the writing distinctly. A most ingenious device is provided by Messrs. Hammer, of 370, Strand, W.C. The uprights are hinged where they rest on the floor so that they can be moved forward from the wall exactly as an open trapdoor in a floor moves when it is closed. The blackboard is fixed at its middle in the frame and swings out with it. When the proper angle is obtained, the central fixing is made tight and the board is kept in the desired position. The frame is held by a chain, and as both sides of the board are blacked, the teacher gets two surfaces for his use as well as an adjustable piece of apparatus. This costs from 42s. to 50s. for a board 5 ft. or 7 ft. by 2 ft. 6 in.

The chief difficulty with movable boards is to secure rigidity. Very firm pressure is necessary for writing on a blackboard, and as a rule teachers write rapidly, so the bearings are called upon to endure strain and shock. Few central screws last long under the strain when the writing is at the top or the bottom of the board, and so the full writing surface is rarely used.

Sometimes the blackboard is fixed along a blank wall of a room so that it can be used by the pupils as well as by the teacher. The right height for fixing this can easily be determined by asking an average boy to come out and touch the wall with his arm extended at right angles to his body and then with his arm at 75°. This latter represents the top height of the board within a few inches, and a foot below the point when the arm is at right angles is a convenient place for fixing the bottom of the board. The maximum width of any writing surface is about 3 ft.; beyond this the material is wasted. To the bottom frame of the board should be fixed a narrow shelf not more than one inch in width edged with a half-inch

bead. This serves to catch the chalk-dust as well as being a receptacle for the chalk. The ends are left free so that the cleaner's brush can be run from one end to the other, and thus no dust is allowed to accumulate in it. Under this shelf should be screwed at suitable intervals ordinary iron loops not unlike the handle of a saucepan lid, into which the duster can be thrust during the day. Unless some arrangement like this can be adopted for the duster it is a most troublesome thing to manage, and there is a tendency to use up any spare clean surface rather than seek for the missing duster. How can anyone guarantee that someone in the class is not speculating on the old notes or diagrams remaining on the blackboard, especially if the present topic is difficult or not intensely interesting? Dusters made of felt pads with a back of chamois leather are excellent things in their way, and if a plentiful supply of new ones can be kept up their disadvantages are not discovered, but they soon fill with chalk dust and they are extremely useful as missiles. Soft material, frequently shaken and washed weekly, serve their purpose extremely well. Hard cottony stuff is not recommended. Dusters cost about 2s. 6d. a dozen, and they are described by the draper as "imitation chamois leather, very soft." Felt pads cost 10s. a dozen. The Educational Supply Association, Holborn Viaduct, E.C., supply blackboards for fixing to school walls, made of thin wood prepared by a patent process, very durable, which will not warp, 4 ft. wide, at a cost of 2s. per foot run.

If the blackboard is detached it is best placed upon an easel, which can be removed from one part of a room to another. If cross lights give trouble, the easel and board is the best arrangement. The easel should be well made, with long back double legs to ensure steadiness and strength. A three-legged easel is a dangerous nuisance in a school-room, though of course very suitable for an artist. A chain from the bottom bar of the front to the bottom bar of the back prevents the easel from snapping at the hinge, and a T-bar for maps is generally supplied. Pegs are a *bête noire*. If one is lost, a penknife or a pointer will not do. Besides looking bad they are untrustworthy. If the pegs are fastened with strings or chains they are limited to too few holes. The best plan is to keep a supply of pegs in the bottom drawer of the desk (they cost 9d. a dozen), and when the easel is not in use the pegs should be placed in an eyelet hole on the inside of each front leg. Sometimes a little chalk-box is screwed to the bottom cross bar, but when this is broken off, and it very frequently is, there is no chance of repairing it. Its projection prevents easels being packed together when they are not required. An easel with its fittings as described costs from 10s. to 13s. each. Below 10s. the easel is untrustworthy, fragile and unsteady; above 13s. there are too many devices and accessories which really serve no useful purpose. If easels are used, the blackboards must be light, not too large, and of such dimensions that they can be handled without difficulty. A heavy black-

board is a perilous thing, for it may be accidentally knocked over, the pegs may work loose or undue pressure may be applied at one side. Four feet by three feet is a maximum size, and such a one costs from 9s. 6d. to 11s.; 1s. 6d. is charged for ruling the music staff and 5s. for ruling a side in inch squares. The total cost of a blackboard and easel is from 20s. to 25s. A second easel to be used as a map stand is necessary unless a suitable wall arrangement has been provided. A map stand seven and a half feet high costs 14s., and this is 1s. more than an easel which serves the purpose equally well.

Of new writing surfaces which have come into use of late, the chief are ground glass, slate, kamptulicon and a cement, *graphikos*.

Ground glass gives a permanent writing surface, and its employment is rapidly extending. It need not necessarily be black (although black mostly obtains), for olive green and chocolate are suitable. Generally speaking, ground glass is three times dearer than wood. A 10s. blackboard in wood would cost 30s. in glass fitted with a pitch-pine frame ready for fixing to a wall. The glass itself works out at 3s. a square foot.

Slate surfaces are easily cleaned, are smooth to write upon and wear very well. Their cost is intermediate between wood and glass, a 10s. board in wood costing 20s. in slate. Both slate and glass are heavy fixtures to a wall, and they are expensive to replace should they be accidentally broken.

Kamptulicon or Cretaline (Educational Supply Association) is a specially prepared dark-green cloth with a surface admirably adapted for chalk drawing. It can be fixed by brass-headed nails to thin boards on a wall and it is not unornamental. Its cost is from 1s. 9d. to 2s. a square yard, so that it is remarkably cheap. Brass-headed nails cost 2s. 6d. a gross, and for those schools where it can be easily renewed it is a most suitable material. It is thick enough to be rigid, washes easily, rubs out without marks and does not seem to crack or peel. A piece 4 feet by 3 feet costs 3s., nails 3½d.

Graphikos (Messrs. Hammer) is an imperishable black plaster which makes a durable writing-surface for walls and improves with use. It can be applied to a wall by any good plasterer, and the material for 75 square feet of wall surface costs 45s. Practically this is a blackboard of 25 feet long, 3 feet high, for 45s., plus the cost of labour.

School furnishing firms now supply strong blackboard cloth with a specially prepared good black writing-surface on one side. This is cut to convenient sizes and mounted on rollers, so that it can be rolled up like a map and carried about. A piece the size of a 10s. blackboard costs 4s., with 1s. extra for music ruling or 1½ inch squares. This material is extremely useful for diagrams, sketches or illustrations which demand preparation outside the class. It rolls without cracking and as a rule the chalk marks do not smear. It is not recommended for writing upon when actually teaching, as it lacks rigidity. In some schools great use is made of brown paper for diagrams

and sketches for illustrating lessons. A sheet of brown paper is easily procurable (double imperial, 45 inches by 29 inches, costs 1s. for 24 sheets), and for maps of special localities or for the details of a piece of complicated apparatus it is excellent. It can be carried to school without trouble and can always be kept for future reference. Considering the advantages this simple material possesses, it is a source of wonder that it has not become more generally used. It takes charcoal, coloured chalk, Indian ink, enamel paints, and very good pictures can be made upon it. Ordinary calico at 6½d. per yard can also be painted upon. A brown paper map easily lasts through a term and it suffers very little from being folded or wrapped up.

Boxes of white chalk suitable for all kinds of surfaces cost 1s. a gross, but there is no reason why coloured chalk should not be more frequently adopted. For maps and diagrammatic purposes a change of colour is really necessary, and each classroom should be provided with a box, as it only costs 2s. a gross.

If the surface has become grey with chalk-dust or worn it can easily be renewed by a local painter or ingenious caretaker. The board should be thoroughly washed with hot water in which washing soda has been dissolved: this is to remove grease stains from constant handling. Then when dry, an uneven surface may be reduced by the use of sand paper and a coat of "renovator" applied by an ordinary paint-brush. This patent composition is sold in tins at 2s. a pint or 3s. 6d. a quart, and a pint is quite sufficient for a blackboard of any ordinary size. Allow plenty of time for the paint to dry and harden before use.

Among the curious things now made for the new writing-surfaces is the sucker compass. It consists of an ordinary wooden compass with one leg to hold the chalk, and the other, usually a sharp spike, ends in an ordinary india-rubber sucker. By wetting it sticks to the surface on the principle of the sucker, and a circle can then easily be drawn. For measuring distances or for drawing a circle from a given centre it seems to fail. It is also supplied by the Educational Supply Association at 3s. 6d. each.

Simple Lessons in Health. By Sir Michael Foster. viii. + 116 pp. (Macmillan.) 1s.—A primer on the laws of health by so distinguished a physiologist as Sir Michael Foster would in any circumstances be welcome, and the recent inclusion of lessons in hygiene in the curriculum of elementary schools makes its appearance particularly timely. The book admirably fulfils the author's object: to show "how the reasons for some of the rules which ought to guide us in the physical conduct of life may, with almost ostentatious simplicity, be explained even to the very young." The dangers of the use of alcohol are pointed out in a manner which children will understand and appreciate: it seems to us much more likely to promote true temperance than is the wholesale condemnation to be found in so many recent school-readers.

GEOGRAPHY IN SECONDARY SCHOOLS.

REGULATIONS OF THE BOARD OF EDUCATION.

I.

By Prof. R. A. GREGORY.

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THE unsatisfactory condition of the teaching of geography in secondary and other schools has for a long time provided a theme for much destructive criticism and an excuse for many tentative syllabuses. In few schools is the instruction in this subject of any educational value, or the scheme of work modern in its intentions and scope. There are several reasons for this state of affairs, and without taking them into consideration it is difficult to see how any progress can be effected.

In the first place, as geography is a general form subject, it is often taught by teachers who have no special knowledge of the principles, aims and methods which should guide the instruction. Another reason is that most examiners of the past, and some in the present, show by their syllabuses and questions that the movement for rational teaching has not reached them. While teachers say that, as they have to prepare pupils for examinations, there is no time to do more than work through a text-book and impress parts of it upon unwilling minds by various processes best known to them, examiners declare that when questions are set on the assumption that reasonable methods of instruction are followed, few answers are obtained. This *impasse* suggests that the third reason for the deficiencies deplored so persistently is to be found in a misconception of geographers and others as to what can be done under conditions which prevail usually in schools, and what examiners may reasonably expect.

Let us take the last consideration first. Probably as much has been written about the teaching of geography as on any subject of instruction in schools. In the *Geographical Teacher*—the organ of the Geographical Association—many admirable articles have appeared in which teachers have described methods of approach and treatment successfully adopted by them. These contributions prove that, with teachers who have given especial attention to geography, the subjects can be taught intelligently, so as to command interest, and, at the same time, cultivate the scientific, artistic and philosophic faculties. But this only means that a teacher who is fond of his subject is able to inspire others with his spirit; and the same teacher may give vapid lessons in arithmetic or English grammar. It is unjustifiable to assume, therefore, that the schemes or methods adopted by enthusiasts admit of general application. This assumption seems to have been made, however, by individuals, committees and other authorities, who have from time to time proposed courses of work in geography for schools. Fortunately or not, inertia is a property not limited to the material world, and the effect of all the apostolic efforts

to make teachers, as a body, change the direction in which they have been moving has been practically nothing.

To produce a substantial change in the character or method of the teaching of any subject, opinions, syllabuses or reports are of little avail unless they are put forward by responsible authorities which can insist upon the adoption of the reforms proposed, or can bring pressure to bear upon examining and governing bodies which have a direct influence upon the work of a school. The change that has taken place in the field of school mathematics during recent years could not have been accomplished if the reports of the committees of the British Association and the Mathematical Association had not been acted upon by the chief examining bodies. When new syllabuses on reformed lines were prescribed by the authorities which by their requirements control a large part of the work of a school, it became essential to introduce new courses and follow new methods. Everyone knows that good teachers had used these methods for many years previously, but their influence alone could never have effected the revolution which has taken place in consequence of the action of authorities responsible for the examination and inspection of schools.

The Board of Education is able to exercise influence of this kind; and the success which has attended its efforts to improve the teaching of English language and literature provides a reason for the recent publication of regulations referring to geography. Since the document describing what should be the aims and contents of lessons in English literature was issued, there has been a marked improvement in the character of the class-books published for use by pupils; and no doubt there will be a corresponding advance of the point of view of examiners and inspectors. If the new regulations for geography should also result—as they probably will—in converting a subject of dreary details into an intelligible study, another very desirable development of our educational practice will have been effected.

It is unnecessary here to describe the new regulations, but there are a few points to which attention may be directed usefully. Perhaps the most important point is that a definite number of hours each week—"not less than two periods of school work and one of home work"—are to be allotted to geography in secondary schools. How these periods are to be included in time tables of schools where geography has been a Cinderella among subjects will be a perplexing problem. Probably at first the inspectors of the Board will be instructed to take a lenient view of this regulation, but pressure will no doubt be brought to bear later if the regulation is neglected. It will be necessary, also, for inspectors to interpret mercifully the instruction as to the preliminary knowledge which pupils will be expected to possess before entering upon the four-year course suggested. The Board apparently adopts the diplomatic policy of asking for more than it expects to obtain; for a note states that it is left "to the

teacher during the first term of each year to adjust the beginning of the work to the state of preparation in which he finds his scholars."

A noteworthy point of the four-year course presented is that it must include the geography of the whole world, so that the common custom of keeping a pupil at work on one or two particular continents, according to the exigencies of examinations, until he leaves school, will not be permitted. In an outline plan of a course suggested as illustrative of what will be required, the first year is devoted to Europe, the second to America and Africa, the third to Asia and Australia, and the fourth to regional contrasts. It is not anticipated that this sequence will be followed always, and there is no reason—geographical or educational—why Africa should be linked with North and South America. But, after all, the method is more important than the order, and teachers who have any original ideas as to matter or methods of teaching will secure approval and encouragement from the Board.

The teaching of geography is, however, not likely to be advanced by the publication merely of schemes and syllabuses in which continents and countries are shuffled and arranged in the order that best satisfies the particular compilers. *Plus ça change, plus c'est la même chose.* Geography will remain the same badly-taught, displeasing and uneducational subject it has long been unless a new spirit enters into the teaching. The touchstone that should be applied to geographical instruction, as, indeed, to all instruction in schools, is that of educational value. The main purpose of education should not be the acquisition of knowledge, but the training of the faculties, which will enable a pupil to recognise geographical facts and phenomena, inquire into their causes, interpret them when expressed by symbols on maps and acquire a vocabulary sufficient to make a work on geography intelligible, instructive and interesting. If this is done the rest may almost be left to itself; but if the attempt is made still to force a large amount of information into a brain unprepared to assimilate it, then the result will again be failure. It is easier for many children to learn lists of names, or commit other matter to memory, than to comprehend geographical causes and consequences, or climatic considerations, which impress themselves so distinctly upon the adult mind. In the old geography lesson, the average teacher and his pupil regarded the subject as a task which had to be performed, and was therefore of disciplinary value if of no other service. This was bad enough, but if school geography is still to consist of a large amount of information as to physical characteristics, combined with undefined and undefinable considerations, then the last state of the teacher and pupil will be worse than the first, and they may say that whereas they have been chastised with whips, they will now be chastised with scorpions.

The first thing to do, then, if an improvement is to be effected in schools generally, is to relieve ourselves of the idea that geography is only studied successfully when a large amount of information—

whether pertaining to physical, political or commercial geography—is imparted. The only good criterion of scientific teaching is the cultivation of intelligence, which shows itself in the power to understand, and the ability to solve, a problem appropriate to the stage of development of a pupil's mind. How to reach this end through lessons in geography is the crux of the whole matter, and the regulations give little help, though the aspect of the Board is propitious.

As to exercises, it is stated that "scholars' notes should not contain merely reproductions of lessons but also worked-out problems together with original maps and plans." Also, we read, "Field-work, excursions, factory visits, and the like may occasionally be used with good effect." It is evident from these and other instructions to inspectors that the Board is prepared to bless good work, but at the same time teachers must discover for themselves the way to salvation. But just as people cannot be made sober by Act of Parliament, so inspired teachers of geography cannot be created by a regulation of the Board of Education. Books are wanted which will show how the intentions of the Board as to problems and exercises may be realised. There are plenty of good class-books of general and physical geography, but with scarcely an exception they are didactic in style and present conclusions or principles to the pupil instead of making him arrive at them through his own efforts. All the facts of geography should be regarded as material for exercises selected so as to lead to broad generalisations, whereas at present they are made merely matter for description. Pupils are spoon-fed with this pabulum when they ought to be gaining something of the spirit of Rikki-tikki-tavi—"Run and find out"—which now inspires the best teaching in observational and experimental science. In the laboratory, a pupil has to make his own observations or experiments, and from his results he may arrive at more or less definite conclusions. Although the principles thus deduced may not be justified by the few experiments performed, yet something is learnt of scientific method, and investigations carried out with more elaborate apparatus become intelligible. In the same way, the aim of geographical teaching should be to make the pupil understand, by simple practical work and observations in his own district, how to interpret the work expressed in good maps and study the causes which determine lines of communication, positions of towns, and the like.

Of course, field-work and excursions are essential to a good course in geography, but they can only rarely be carried out, and though a few pupils derive benefit from them, it may be doubted whether the class as a whole gains much advantage. It is in the class-room that the work must be done in general, with teachers who have "little to earn and many to keep"—in order—and special knowledge of geography. Show these teachers how practical work can be made practicable in schools with pupils of ordinary capabilities; and then, under the benign influence of the Board,

something will be accomplished. One result of the new regulations will probably be that more teachers will take up the special study of geography than hitherto, but if we have to wait until the supply of such teachers is sufficient for our schools, the regulations will become a dead letter. Let us hope that the issue of the regulations will stimulate the study of geography by the method of self-help and so bring the subject in line with other sciences.

II.

By T. ALFORD SMITH, B.A., F.R.G.S.
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THE regulations recently issued by the Board of Education with respect to the teaching of geography in secondary schools have been drawn up on satisfactory lines. Those responsible for the drafting of these regulations are to be congratulated on the breadth of view of their suggestions, which give freedom to school authorities in drawing up schemes of geographical work, and to teachers in carrying out the scheme decided upon.

In the regulations it is distinctly stated that "the Board desire to leave freedom and wide scope to schools with regard both to subject matter and methods of teaching, which should be carefully adapted to the special conditions existing in each case." This is as it should be; and it is to be hoped that the adoption of this idea will tend to free geography from the deadening influence under which it has so long laboured, and to infuse into it that living interest which so rightly belongs to it. It is quite clear that the Board of Education will no longer countenance the old-fashioned, stereotyped way of teaching geography by lists of place names, dry statistics, &c. On the contrary, the regulations point out that "the aim of the teaching should be to produce a vivid impression of connected facts through considerations such as those of cause and effect, and practical bearing of the facts selected." Again, "no facts should be stated without reasons," while names should not be entered by pupils in their maps unless they can "justify the names inserted." Great stress is also laid on the use of maps, and on the construction of maps and diagrams.

When we come to the use of text-books, the regulations state that "text-books are not essential in cases where the teacher has special knowledge, but where the teacher has not such knowledge, text-books should be used." Now, here we meet a real difficulty; if a specialist is teaching the subject it matters little whether text-books are used or not—and probably text-books would only be used as works of reference. In most schools, however, the teaching of geography is assigned to a member of the staff (usually the English master), whose chief interest lies in history or literature, who, moreover, considers the geography lesson as a troublesome addition to an already crowded time-table. The geographical studies of such a master sometimes consist in tracing carefully the movements of the Russian and Japanese armies in Manchuria, through places with unpronounceable names, or in discovering the most expeditious route

to the place he has selected for his next holiday. In school, the man without special knowledge will doubtlessly be eager to have a text-book from which lessons may be set and heard in the time-honoured way, while the regulations we are now considering will be a source of trouble if he be expected to act upon them.

In order to carry out the recommendations of the Board of Education it seems essential, therefore, that the teacher of geography should have special knowledge of the subject.

The importance of geography is now being recognised by many examining bodies as well as by the Board of Education, and hence it is being placed on the list of obligatory subjects for many public examinations: in addition to this, however, it is necessary that the marks attainable should be at least equal to those given to English history, English grammar, &c. Headmasters of secondary schools will then soon provide masters who are specially qualified for this work, and will see that a reasonable time is assigned to it on the time-table—not less than that mentioned in the regulations, viz., two periods of school work and one of home work.

Although anxious to adopt modern methods, many teachers have hitherto been deterred from so doing because they fear that such methods will not pay in the school examinations. In this case, perhaps, the best plan is to make a gradual change from the old to the new; and in the meantime every opportunity should be taken to influence inspectors and examiners whenever they visit the school.

From personal experience, the present writer can say that the inspectors of the Board of Education have always shown themselves to be reasonable in estimating the geographical work submitted to them, and they have always been appreciative when new methods and new devices have been explained, and the results of such experimental work have been brought before their notice. At present, many teachers assert that if they teach on modern lines their work is largely discounted, because examiners still set questions which can only be answered after a course of cramming, while examiners complain that if they set rational questions, no candidates attempt them.

The employment of one who has made a special study of geography is of the first importance, but second only to it is the setting aside one room for geographical work—a kind of geographical laboratory in which all the necessary apparatus can be kept, and will, therefore, always be available: such apparatus as a globe, maps of many kinds, diagrams and models, and where simple experiments can be performed and simple observations can be arranged. Such a room is possible in every school, and it is quite as necessary as those now set apart for the teaching of drawing, chemistry or physics. With regard to apparatus (mentioned in the regulations), one globe at least should be provided, and this should always be in evidence for purposes of reference as well as for special lessons. For ordinary work a globe of large size with slate surface, on which the parallels of latitude

and meridians of longitude are incised, and the outline of the continents marked in white, will be found most useful at all times. Wall maps, large, clear and up to date, are also essential, but here the question of expense is a serious one. In most secondary schools the funds available for apparatus are very limited in amount, and after the demands of elementary science have been satisfied, little is left for such subjects as geography. Again (unless the funds are abundant), it is impossible to buy sufficient maps to illustrate a fairly complete course of lessons, while it is equally impossible to find published maps to illustrate just the particular point which needs most illustration. Hence, wall-maps and atlases must be supplemented by rough diagrams and outlines prepared by the teacher himself.

The instructions to inspectors, dealt with in the preceding remarks, disarm criticism almost entirely. When we reach the suggested four-year course, we find that no hard and fast syllabus is laid down; in fact, any scheme which embraces the geography of the various distributions will be accepted by the Board of Education. The suggested course must undoubtedly be accompanied by practical work, which is given a place in the syllabus. Many simple observations can be arranged for without interrupting the ordinary lessons. For example, (a) the altitude of the sun can be determined by means of a shadow. (b) A series of altitudes taken at midday during the summer term (a period which includes the summer solstice) can be observed, and from them a curve can be drawn to show the apparent path of the sun for that period. (c) The north-south line can be determined also by equal altitudes of the sun. (d) During the dark afternoons in the winter term a bright light can be used in conjunction with the globe to illustrate the variations of light and darkness at different parts of the earth's surface. (e) The idea of map making can be well demonstrated by measuring a base line in the cricket field, and then observing various points by means of a sight ruler, and marking the directions on a plane table from both ends of the base line.

Assuming that the geography syllabus has been drawn up on the lines of the four-year course, it is somewhat difficult to suggest text-books if the teacher has no special knowledge; in this case the chief aim should be to choose books that are interesting to read as well as trustworthy, and, if possible, illustrated with good pictures. Books which contain lists of names must be carefully avoided, otherwise the time-honoured hatred of anything pertaining to geography will be continued. On the other hand, it is necessary in most schools to have a text-book that can be used throughout the whole four-year course, chiefly on the ground of expense. A special text-book for each part of the work is, of course, very desirable, but in most cases this is impracticable. Up to the present time there has been published no text-book or series of text-books written from the modern standpoint. Some attempts have been made, but the results so far have not been very satisfactory. Writers of school geographies still make the mistake of crowding

into a given number of pages so many statistics as possible, these being usually classified in a most careful and at the same time distasteful manner. The fact is lost sight of that the aim of teaching geography scientifically is not to fill boys' memories with encyclopædic knowledge, but rather to stimulate the imagination and to train the mind to appreciate considerations of cause and effect. Many teachers and examiners often make a mistake in giving a boy credit for considerable geographical knowledge because he happens to possess a retentive memory, although he is possibly quite deficient in imagination and reasoning power.

A book now being used in many schools contains a very complete list of the capes and bays of the British Isles; if it is necessary for a boy to learn the capes and bays, why cannot he at once open his atlas and read them from the map, where he will at least have the advantage of noting their relative positions? Instead of giving a useless list of names, the geography book might point out such things as the following: (a) the importance of Brow Head and the Lizard to Atlantic liners; (b) why Beachy Head is being worn away while Dungeness is being extended seawards every year; (c) the relative advantages of the estuaries of the Thames and Mersey, and similar matters.

Perhaps the most useful book at this juncture would be a hand-book for masters (especially those without special knowledge) containing a scheme of lessons drawn up on modern lines and giving sources of information. Such a book, although its sale would be limited, would be invaluable to many teachers as a model from which other similar lessons could be prepared.

It is therefore impossible to recommend any particular book; in fact, at the present moment everything depends on the enthusiasm of the teacher. A selection might advantageously be made from the following, and such books used constantly, with a good atlas, would be sufficient for ordinary school work:—

- Mill's General Geography (Macmillan).
- Herbertson's Junior Geography (Clarendon Press).
- Chisholm's School Geography (Longmans),
- Meiklejohn's Comparative Geography (Holden).
- Geographical Manuals (Philips).
- Huxley's Physiography (Revised Edition) (Macmillan).
- Geikie's Elementary Physical Geography (Macmillan).
- Chisholm's Smaller Commercial Geography (Longmans).
- Lyde's Man and his Markets (Macmillan).

If the teaching is in the hands of a specialist, books of reference only will be needed—the pupils themselves will probably have no text-book to use in class: the chief object for providing books will be to teach pupils how to find out things for themselves. If a room is set apart for geographical work, as suggested in the foregoing, these books of reference will form a most useful geographical library, and will always be accessible to the more advanced pupils.

The following books would form a nucleus for such a reference library:—

- Réclus's Universal Geography.
- Compendium of Geography (Stanford).

- International Geography. Edited by Dr. Mill. (Newnes.)
- Mackinder's Britain and British Seas (Heinemann).
- Partsch's Central Europe (Heinemann).
- Wethey's Geography of Europe.
- Chisholm's Commercial Geography (Longmans).
- Lyde's Commercial Geography of the British Empire (Methuen).
- Adam's Commercial Geography (Appletons). Especially useful in dealing with the United States.
- Philip's Geography of the British Colonies.
- Davis's Physical Geography (Ginn).
- Dryer's Physical Geography (American Book Co.)
- Ramsay's Geology of Great Britain (Stanford).
- Concise Gazetteer of the World (Chambers).
- Mill's Realm of Nature (Murray).

Among the numerous excellent atlases that can now be obtained at most reasonable prices may be mentioned:—

- Elementary Atlas of Comparative Geography (Philip).
- Sydow-Wagner's School Atlas (Gotha).
- Bartholomew's Century Atlas (Walker).
- Wide-World Atlas (Johnston).
- Bartholomew's Atlas of Commercial Geography (Cambridge University Press).
- Systematic Atlas (Philip).
- The Times Atlas.

THE NATIONAL HOME READING UNION.

By NORMAN L. FRAZER, B.A.
Whitgift School, Croydon.

TWO circulars on the work of the National Home Reading Union were recently addressed by the Board of Education to public library authorities and to local education authorities respectively. The Board's object in each case was to recommend the work of the Union and to invite co-operation with it. In the Circular to the local education authorities, with which we are more immediately concerned, the Board recalls the fact that "one of the principal aims of the Union has been to encourage children in elementary schools to read books for themselves under the guidance of competent scholars." "It desires," the Circular goes on to say, "by creating in them the love of systematic reading, and by fostering the habit of reading among those who have left school, to become an effective means not only of broadening school education, but also of prolonging and confirming its influence." With these objects the Board declares itself entirely sympathetic, and proceeds to give the proposed methods of co-operation between the Union and the Schools as outlined by the former. To these we shall recur later, and shall refer no more to the Circular, except to point out that in the quotation we have just made the Board needlessly limits the Union's work to elementary schools, for Dr. Paton, the distinguished honorary secretary of the Union, in a leaflet called the "People's University," has expressly remarked that the advantages offered "specially recommend the National

Home Reading Union to those who leave our public schools and our grammar schools, and are not able to continue their education at one of the universities"; and the official prospectus of the Union states that "the Young People's Section is intended for boys and girls, up to the age of about 15 or 16, in elementary or secondary schools." The purpose of the present article is to consider the work of the Union from the point of view of the secondary school, and especially to inquire whether and how the English literature work of such schools could be helped by membership of the Union.

In the first place, what is it that the Union has to offer? In general terms, the Union's offer can hardly be better expressed than in the words of Prof. Churton Collins in the *Nineteenth Century* for June, 1903. "Here, then, we have an institution the potentialities of which are sufficiently apparent from what it has already achieved. For fees ranging from sixpence to two shillings annually, any child or adult in England can be taught to read with system and profit, can be guided by experts—some of them among the most distinguished specialists of our time—to the best books on any given subject; can be supplied with many of these books at nominal prices, often for a little more than a few pence; can, by being furnished with lists of books recommended for collateral and supplementary study or for reference, be taught how to utilise the public libraries and find their way about the catalogues; can be shown how easily and simply a practice scarcely less deleterious to the mind than dram-drinking is to the body—the practice of loose and purposeless reading—may be transformed into a means not merely of self-education, but into a source of one of the ghest and purest pleasures possible to man."

Coming to closer quarters, the Union divides its reading courses into four sections: the Special Course, the General Course, the Young People's Section and the Introductory Course. Each of these courses has its own subjects, its specially prepared book-lists, its own magazines; the members of all the courses have equal facilities for corresponding with acknowledged authorities on any difficulties they meet with in their reading. Each course consists of a number of the most varied topics, each of which, planned for a year's reading, is further illustrated and discussed in the magazine proper to the special section. The system will be best illustrated by an example. The Young People's section for the present session (1905-1906) offers three topics: Romance, History and Nature Study. Romance is further defined as "poetry and fiction, with travel and biography." The book list in this, as in each of the other topics, is divided into books required, supplementary books and reference books. The merest glance would suffice to show that the lists have been drawn up not only by scholars, but by experienced educationists—they are so varied, so illustrative, including as they do Tennyson, Browning, Anderson, Hawthorne, Dickens, Stevenson, Southey and Scott. For many of the books special portfolios

of maps and prints have been prepared for the use of members, and a table is given showing the probable order in which the books mentioned will be dealt with in the corresponding magazine of the section. In history the period chosen is 1603-1700, and special attention is invited to citizenship. Here the supplementary list is still further increased by an illustrative list consisting chiefly of novels dealing with the period.

The General Course is of a more advanced nature and offers no less than twelve topics. It is largely literary, and for the present session includes the Age of Revolution in English Poetry, Tennyson and the Legend of King Arthur, some English Social Movements as Reflected in Novels, the Age of Milton, Stevenson and his works, and general literature: Essays, Romance, Poetry, &c. Surely, a list comprehensive enough to satisfy the most exacting of syllabuses. But history and science are not neglected, for the remaining topics are Health in the House, the Making of Modern Germany, the French Revolution, Landmarks of European History, the Open Air and Social Questions.

The Special Courses are, of course, intended for more advanced students and the book lists are remarkably full. The first, of special interest for our present purpose, is the English Language and Origins of English Words. The standard set will be gathered by reproducing the list of required books. It is: R. E. White's "Words and their Uses," J. H. Moulton's "Two Lectures on the Science of Language," W. W. Skeat's "Primer of the English Language," and Trench's "English Past and Present." Among the other special courses for the present session are "An Introduction to Philosophy, with special reference to Ethics and Sociology," "George Meredith's Novels and Poetry," "Mediæval and Renaissance Italy, especially Rome," and "The English Drama up to and after Shakespeare."

The advantages to be gained by secondary schools co-operating with the Union appear, therefore, solid enough. But the question arises whether the co-operation is in itself at all feasible. What, for instance, are the conditions of membership so far as the schools are concerned?

In the Young People's Section it is only the teacher who pays a fee at all. His yearly subscription of eighteen pence entitles him to the book list, published once a year, and to the nine copies of the *Young People's Magazine* post free. Extra magazines for pupils (and such will doubtless be thought desirable) can be obtained for sixpence for the yearly set of nine. In the case of the General Course the fee for each member is eighteen pence, and each member gets his own copy of the book list and nine magazines of the Section in the course of the year. The annual subscription for the Special Course with similar privileges is three shillings. But just as in the Young People's Section, so in the General and Special course, the teacher alone may be a member. If any teacher is still in doubt as to what course or section he could most advantageously follow,

the general opinion of the secretary of the Union will serve as a guide. Mr. Collins—and many besides his late colleagues at the Mercers' School will readily agree that he is peculiarly well qualified to express an opinion—says that he thinks that in a "public" school, using the word in the popular sense, "the lowest classes might take the general course (or the introductory course, if not much time could be devoted to the reading of English literature), and the upper classes (say, the remove, and upwards) the special courses. In the usual grammar school, perhaps only the top form would be up to the standard of the special courses. In a preparatory school the two bottom classes might take the young people's section and the upper classes the general." If I may venture to add to Mr. Collins' classification, I should say that in such first-grade day schools as I am most familiar with the lower middle forms would take the young people's section, the upper middle and the removes the general, and the sixth the special courses.

To recur to the methods of co-operation recommended in the Board's Circular, they undoubtedly do not err on the side of over-precision. It is suggested that classes might be formed into "home-reading circles" under the leadership of the teacher, that selected books of the Union might be adopted as class reading-books in certain forms, and that scholars might be encouraged, after leaving school, to join the National Home Reading Union "reading circles."

To begin with the last suggestion first, it is, I fear, even still a very difficult matter to pass on the boy or girl leaving school to other intellectual agencies. So far as my experience goes, the proportion of scholars so handed on is exceedingly small. It is far more practicable to start the co-operation while the pupil is still at school. In fact, the simplest solution is likely to be the most heroic. As in elementary schools the Board has already arranged that under the Code a reading circle in connection with the N.H.R.U. may take the place of a reading class, a grant being obtained on attendance, so under the more elastic arrangements of secondary schools—grant-earning or not—the whole literature of the classes may be fused into a N.H.R.U. course, with the teacher as leader, and thus secure the special advantages of systematic reading and the other advantages that the Union has to offer. What, for instance, could be urged against the wholesale substitution of the course on Romance, which we have already outlined, for any other course of reading that the Board could possibly accept? Or if it be found that the particular course proposed by the Union does not fit in with the special requirements of the school, why should not a special period in the week be allotted for such a course, much in the same way as at present a certain period is assigned for the more or less promiscuous reading provided by the form library? Here, at any rate, is a point where co-operation is simplicity itself; the form or school library could provide the books required, and recommended by the Union, for

the benefit of those who wish to make use of the Union voluntarily and, as it were, unofficially.

In many schools—particularly day schools—there is to be found an institution which styles itself a Literary and Debating Society; during the winter term it drags on a precarious existence, bolstered up chiefly by bad weather and youthful nescience; in the spring term practice for the sports usually puts an end to its moribund meetings. If, in place of the haphazard, hackneyed discussions and wearisome papers which succeeding generations of boys inflict upon themselves and each other, a continuous, systematic course could be provided, enlivened by apt discussions on definite realities and by illustrative portfolios and magazine articles, while always in the background there is a *deus ex machina* in the shape of a world-famous authority to whom to appeal, then there might be at least one really live school society elsewhere than on the playing fields.

But there are some happy schools—even day schools—where literary and debating societies flourish; and to such schools the Union offers special advantages, for it is prepared to affiliate such societies if they have not fewer than forty members at a yearly fee of sixpence per member. These affiliated societies receive one complete book list of all sections and one copy of each of the magazines in return for every forty members' subscriptions.

But even one isolated reader is better than none, and a teacher who cannot form a circle can at least put some of his pupils in connection with the Union by putting its prospectus upon his notice board and by recommending it as occasion serves. And if he cannot form or join a circle of his pupils, he will probably find that the book lists published by the Union are well worth having even in the preparation of his ordinary lessons, and he will for that reason alone wish to enrol himself as a member. And, indeed, on his purely professional side he is not neglected, as is shown by a glance at the *Special Courses Magazine* for December, 1904, in which there is a special supplement by Mr. H. T. Mark, of Manchester University, on "Some Applications of Psychology to Education."

The National Home Reading Union has made itself no mean factor in the general scheme of national education; it has joined hands with the libraries and the schools, and those who co-operate with it may be assured that they are engaged shoulder to shoulder with the best among our countrymen in a work of the dignity of which no schoolmaster need be reminded.

The Picture Shakespeare. Twelfth Night. xi. + 144 pp. (Blackie.) 1s. 6d. net.—We welcome this addition to a unique and attractive series, though we wish that some of the matter placed in the appendix had been transferred to its more natural home, namely, the introduction. The illustrations in this volume are some of them extremely interesting, and all are good. The notes merit high praise. A capital way of promoting the interest of juvenile minds in Shakespeare.

THE TEACHING OF EXPERIMENTAL MECHANICS.

By W. D. EGGAR, M.A.

(Concluded from p. 326.)

(iii) STATICS AND KINETICS.

“KINEMATIC” is interesting, and we may be tempted to linger over it. The three formulæ, $v = u + at$, $s = ut + \frac{1}{2} at^2$, $v^2 = u^2 + 2as$, provide so convenient a set of fences for testing algebraical facility that we may send our pupils backwards and forwards over them with the impression that they are learning mechanics. But, to return to Dr. Johnson’s metaphor, this dual garment has another leg, which Clifford called “Static,” and, when we have stepped through that, we may be able to clothe us with kinetics, or dynamics, or mechanics, whichever name suits us best. I do not mean that it is necessary to go through moments, parallel forces, centre of gravity, at this stage, though I admit that something may be said for this procedure. My meaning is that before investigating the connection between force and acceleration we must go back to the spring balance and the weighing machine, the statical measure of force. Experiments with spring balances in series can be made to show that the tension of a light straight string is the same throughout its length, and that it is not appreciably altered if the string passes round a smoothly running (not a “smooth”) pulley. This will prepare the way for an experiment to verify part of Newton’s Second Law, viz., that *acceleration is proportional to force*. The trolley (Fig. 1)¹ is placed on

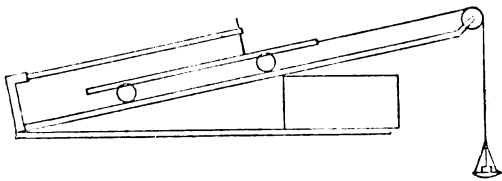


FIG. 1.

the inclined plane, and held back by weights until it runs down with *uniform speed* when started. The weights balance the effective force down the plane, whatever that may be, and when the weights and scale-pan are removed this same effective force has its own way with the trolley, and we can measure the consequent acceleration. The friction of the pulley should be negligible, certainly less than a gramme weight; and in testing for uniform speed by equality of the wave lengths traced by the paintbrush, it should be possible to adjust the weight to the nearest gramme.

The following is an actual set of measurements:

Weight of scale-pan 21 grammes.

First observation: with 8 grammes in the scale-pan the trolley was found to move with uniform speed when started down the plane.

∴ when the string was detached the force down the plane was equal to the weight of 29 grammes. Wave-lengths 1·7, 2·6, 3·6, 4·55, 5·5, 6·5, 7·4, 8·3. Average distance, 0·95.

Second observation (with plane at a different slope): scale-pan + 30 grammes = 51 grammes. Wave-lengths, 2·25, 3·85, 5·55, 7·2, 9, 10·6. Average difference, 1·67.

$$\text{Ratio of forces} = \frac{51}{29} = 1·76.$$

$$\text{Ratio of accelerations} = \frac{1·67}{0·95} = 1·76.$$

Hence the ratios were the same within 1 per cent.

In this experiment it is not necessary to measure the gradient of the plane, or to allow for the friction of the trolley wheels. But the assumption is made that, when the trolley is allowed to run freely, the same effective force is acting on it as is opposed by the weight when the trolley is running with uniform speed. By making the equilibrium one of uniform speed instead of rest, we get rid of the error due to kinetic friction almost completely. Galileo’s statement of the fact which Newton has embodied in the first part of his Second Law is as follows: “We are agreed that in a movable body the *impetus, energy, momentum, or propension to motion*, is as great as the *force or least resistance* which suffices to *support* it.” And this statement was based on two experimental facts—one, stated by Stevin of Bruges, in 1586, that the statical force required to support a weight on an incline is proportional to the gradient; the other, discovered by Galileo himself in his experiments of rolling a ball down a plane, that the acceleration is also proportional to the gradient. Neither of these facts can be independently verified with the accuracy which is possible in the method just described.

The verification of the fact that, *given a constant force, the acceleration is inversely proportional to the mass*, has already been described by Mr. Fletcher in THE SCHOOL WORLD, May, 1904.

CONSERVATION OF MOMENTUM.

Hicks’s Ballistic Pendulum, described in Hicks’s “Mechanics” (Macmillan), gives excellent results. Two of Mr. Fletcher’s trolleys can also be made to collide, and stick together, the vibrating spring giving a wave curve which supplies direct information as to the velocities before and after impact. Fig. 2 shows the arrangement; but a spring-clip

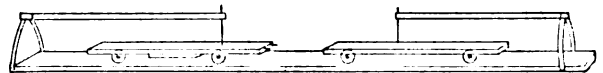


FIG. 2.

is better than needle points for making the trolleys adhere after impact.

¹ The illustrations are taken, with permission, from the author’s book on Mechanics, published by Mr. Edward Arnold.

PARALLELOGRAM AND TRIANGLE OF FORCES.

To find the direction and magnitude of the resultant of two forces we must find by experiment the direction and magnitude of the force which will keep the other two in equilibrium, and may be called the *equilibrant*.

This may be done in various ways. One way is to knot three strings together and connect them by spring-balances to pegs or nails at different corners of a table. Shorten the third string until it needs a considerable pull to hitch it on to the third peg. Put a large sheet of paper under the knot, and mark the directions of the three strings, writing against each the reading of its spring-balance.

Then remove the paper, and rule lines from the centre of the ring in the directions marked, making these lines proportional in length to the forces. Thus, suppose the directions of the strings to be *AB*, *AC*, *AD*, and the spring balances attached to these strings to show 9 lb., 12½ lb., 10 lb. respectively. We would make (Fig. 3)—

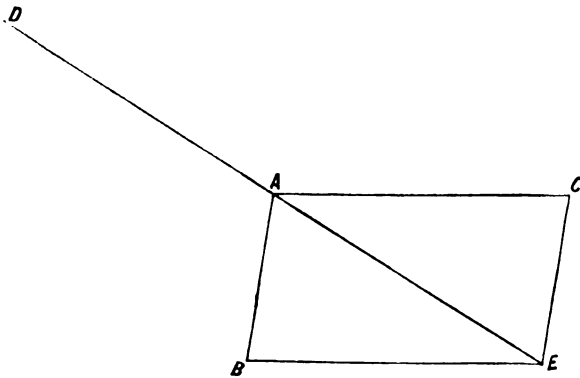


FIG. 3.

AB, *AC*, *AD* in the proportion 9 : 12½ : 10, or 18 : 25 : 20.

Then these lines represent the three forces acting on the ring at *A*. If by means of set squares we complete the parallelogram *ABEC*, by drawing through *B* a parallel to *AC*, and through *C* a parallel to *AB*, then we shall find that the diagonal of this parallelogram, viz., *AE*, is equal and opposite to *AD*.

Sometimes a vertical board, with the arrangement shown in Fig. 4, is preferable.

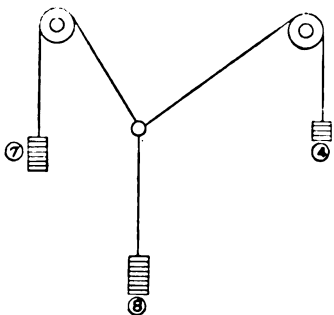


FIG. 4.

is no object, each student may be provided with a framework suitable for this and other experiments, and fitted with adjustable pulleys. For demonstration purposes, as well as for students' use, I find that a soft board, such as an old blackboard,

is very cheap and useful, with wooden pulleys running on bradawls which can be stuck into the board at any required point. The pulleys should be bushed with brass, and they will be found to run quite freely. The pulley can be made to stand out from the board by a stout ring.

Apparatus and methods for verifying the laws of the Triangle of Forces, Moments and Parallel Forces are fully described in many books on Statics. S. H. Wells's "Practical Mechanics" (Methuen) and Duncan's "Applied Mechanics" (Macmillan) will be found very useful to the teacher, even if the resources of the school laboratory do not permit of a large outlay. Much of the apparatus can be made at home, and Mr. Wells's book contains useful information as to the cost of weights, spring balances, &c.

A few hints are here given for different kinds of experiment.

INCLINED PLANE.

A smooth, flat surface which can be levelled and then tilted to any required angle is wanted, also a heavy smoothly-running roller, or a small truck (Fig. 5). A spring-balance, or a weight hung

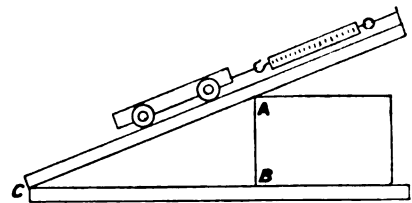


FIG. 5.

over a pulley, will serve to measure the force up the plane. If a scale-pan is used, its weight must be known and allowed for. The surface of the plane must be perfectly horizontal before the tilting block is inserted. The angle of tilt can be measured with a protractor, or the sine found by measuring the distances *AB* and *AC*, and finding the ratio $\frac{AB}{AC}$.

Find weight of roller *W*.

Find what force *P*₁, up the plane, will just prevent it from rolling down, and what force *P*₂ will just not move it up. These are probably not the same, owing to friction of the roller; but the average of the two $\frac{1}{2}(P_1 + P_2)$ may be taken as the force required to support the roller on the plane. Let this force be *P*. Find the ratio $\frac{P}{W}$.

Repeat these observations for different angles. Tabulate your results thus:—

Weight of Cylinder = 250 g.

α = angle of Plane	Height <i>AB</i>	Length <i>AC</i>	$\sin \alpha = \frac{AB}{AC}$	<i>P</i>	$\frac{P}{W}$
34°	7.5 cm.	13.4 cm.	0.56	140 g.	0.56

TRIANGLE OF FORCES.

Find the force P necessary to pull a weight W suspended from A (Fig. 6) through an angle α

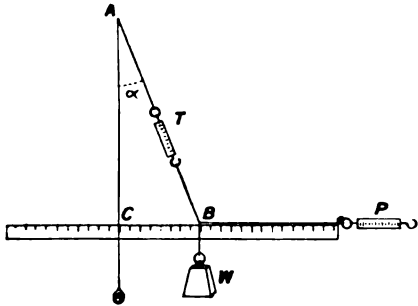


FIG. 6.

from the vertical, which can be marked with a plumb-line, while the distances BC , BA , can be easily measured. The results for different angles can be tabulated as above.

In some cases it is necessary to measure pressures as well as tensions, and it is useful to have *compression-spring-balances* (Fig. 7). This may be adapted to a jib-crane. The jib should be set up in place of the pan of Fig. 7, and the readings of P and T (Fig. 8) taken. Then a weight W should be put in the scale-pan, or hung on, and the *increase* in P and T noted. It is these two increments which go towards supporting the extra weight W .

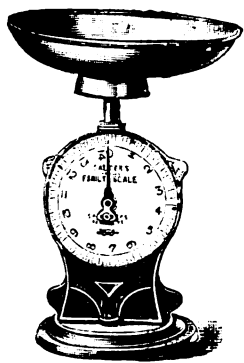


FIG. 7.

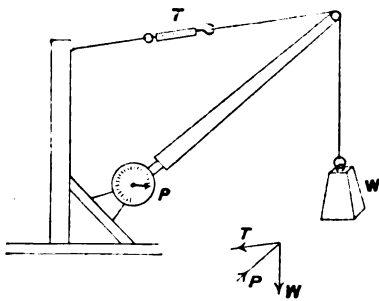


FIG. 8.

The same compression-spring-balances are useful for parallel forces and moments. The arrangement in Fig. 9 is preferable to that in Fig. 10, as it more nearly approaches actuality.

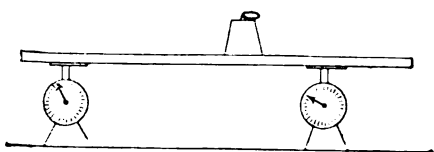


FIG. 9.

For moments, a bar hanging freely from a nail, and kept vertical by weights hanging from strings

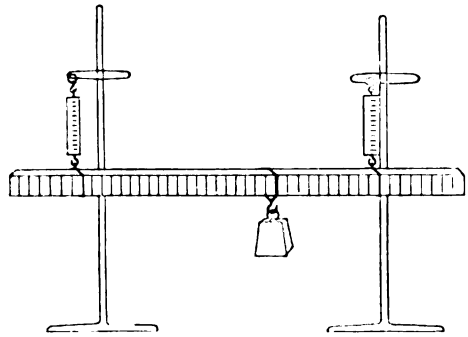


FIG. 10.

passing over adjustable pulleys, as in Fig. 11, is useful. The same bar, hanging by a long string, can be kept vertical by weights arranged as in Fig. 12, and this verifies the law of Parallel Forces as well as moments. It will be found difficult to make the adjustments in this case unless the weights and distances are first chosen so as to agree with the theory.

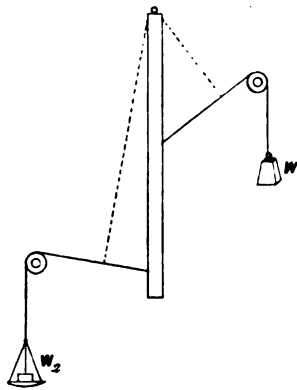


FIG. 11.

LINK POLYGON.

Boys find this difficult unless they begin with a simple case.

Let P and Q be two parallel forces (Fig. 13). It is required to find a point in the line of action of their resultant. Start as if to draw a triangle of forces of which two sides are to be parallel and proportional to P and Q . Thus AB represents P , and BC represents Q . Then obviously the third side is CA , and a force proportional and parallel to CA will keep P and Q in equilibrium.

Take a point O outside ABC , and join OA , OB , OC . Then forces proportional to OA , AO , OB , BO , OC , CO are obviously in equilibrium with each other, and can be added without upsetting existing arrangements. Let us put a link b between P and Q parallel to the line OB . (Note that B is the point of junction between the P and Q forces in our "triangle" ABC .) Through the point where this

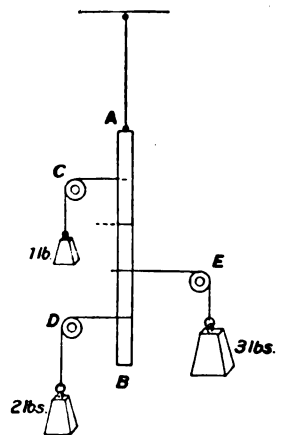


FIG. 12.

link joins P draw a line a parallel to OA , and similarly, through the point where the link b joins Q , draw a line c parallel to OC . Let a and c meet in R . Now P, OA, BO are in equilibrium since they form the sides of the triangle ABO taken in order. Similarly Q, CO, OB are in equilibrium. There remain only the forces AO, OC meeting at

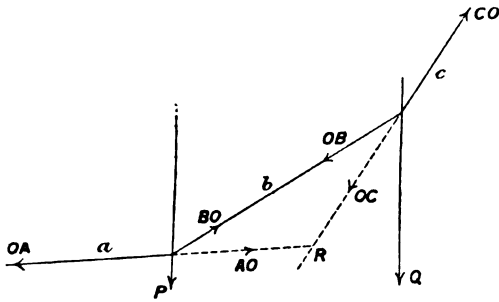


FIG. 13 (i).

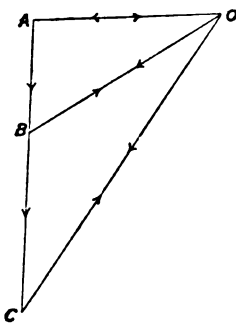


FIG. 13 (ii).

R to represent the original pair of forces P and Q . Hence R must be a point of action of the resultant. Practically, P and Q would be weights hanging from strings a, b, c attached to two nails in the black-board. If P is a known weight and Q an unknown weight, the value of Q can be found experimentally by drawing the link polygon $OABC$ with its sides $OA, OB,$

OC parallel to the directions of the strings. Then $Q : P = BC : AB$.

From this simple case we can proceed to more complicated ones.

WORK AND ENERGY.

For a simple experiment nothing better can be found than Galileo's, shown in Fig. 14, which is

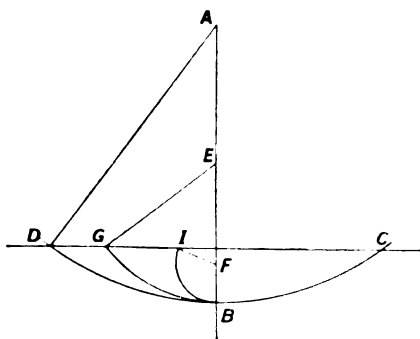


FIG. 14.

copied from his Dialogues. A ball B is suspended by a fine string from a nail A , and a horizontal line CD is drawn on the wall below A . The ball is

pulled back to CD and let go. The speed at B is enough to carry it very nearly up to the line at D , the resistance of the air stopping it very slightly. Now put another nail at E or F vertically below A , so as to catch the thread when the ball is at its lowest point. Then the ball describes the arc BG or BI , in each case rising very nearly to the same horizontal line.

The kinetic energy of a flywheel can be found by an arrangement shown in Fig. 15.

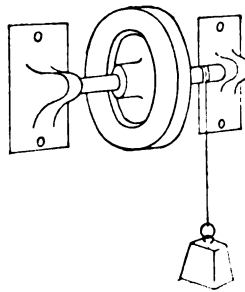


FIG. 15.

The rim of the wheel should be smooth, so that a strip of paper can be fastened on to it closely, and a vibrating steel spring of frequency about 10 per second, carrying a paint brush, should be mounted so as to trace a wavy curve on the paper. The work done by the weight W in descending h feet is Wh foot-pounds. The kinetic energy of the weight at the

end of its fall is $\frac{Wv^2}{2g}$ foot-pounds. This, which is

lost on impact against the ground, is less than Wh , and the rest of the energy has been spent in overcoming friction and in giving kinetic energy to the wheel. The energy spent against friction can be determined by finding what weight will just keep the fly-wheel in steady motion.

Frictional experiments are easily devised, and the results, when plotted on squared paper, give an excellent illustration of the "smoothing" of a curve to obtain an average result. The measurement of work done against friction is introduced in Callendar's beautiful apparatus for determining the mechanical equivalent of heat. This, made by the Cambridge Scientific Instrument Company, is rather costly; but students understand it when they see it, and admire.

MACHINES.

The only satisfactory way of approaching the subject of machines is by way of *work*. A good

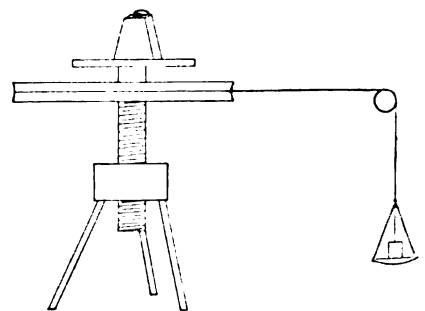


FIG. 16.

type of experiment is that with the screw-jack (Fig 16), but the following method applies to all. The

velocity ratio, *i.e.*, the ratio of the distance travelled by the scale-pan to the distance through which the weight is raised, can be measured experimentally, and calculated from the radius of the wheel and the pitch of the screw. Let this ratio be N . Then, if an effort P be applied, the theoretical load which it should lift is NP . If the actual load is W , then $NP - W =$ friction. The efficiency is $\frac{W}{NP}$, which can be expressed as a percentage. A set of readings with different loads can be taken, and tabulated.

THE REMUNERATION OF TEACHERS.

By G. E. S. COXHEAD, M.A.

Liverpool Institute High School.

Chairman of the Incorporated Association of Assistant Masters.

1. (a) In February, 1904, the salaries paid were respectively £160, £100, £95, £90, £90, and £35—in all cases without board and residence. The largest of the salaries was paid in respect not only of day-school work, but also of service rendered in the evening classes.

(b) The average salary of the seven assistant-mistresses is £93 11s. 5d., the highest being £105 and the lowest £60. It should be added, however, that three of them receive extra payment for music pupils and one for instruction given to the student teachers.

(c) The average salary of the whole number [more than seventy], seniors and juniors alike, was only £151 5s. 6d. per annum.

2. No secondary school can really do its work as that work should be done unless its teachers are men or women of high ability and culture.

(*Prof. M. E. Sadler, Special Reports on Secondary Education, 1905.*)

3. The Council of the Teachers' Guild have, for some time past, viewed with anxious concern the short supply of men and women now entering the teaching profession, especially of those who possess good academic qualification. . . . It is in secondary schools that this deficiency in the supply of qualified teachers is most grave.

(*Memorandum of the Teachers' Guild on the subject of the Remuneration and Tenure Conditions of Teachers in Secondary Schools.*)

[For convenience, men only have been spoken of. It should be understood that the contention is held to apply to women also.]

THESE extracts give in brief a just, though limited, picture of the disabilities and needs of secondary schools. The payment is often low, the necessity for good teachers is imperative, there is a shortage in the supply. It may now be assumed that, thanks to much untiring effort, this condition of affairs is at length generally known. What is more hopeful still is that the knowledge has been spread at a time when power has been granted to apply some remedy, and when there is evidence of a growing desire to use that power. Secondary education, neglected by the State, has in some degree returned the neglect. The Act of 1902 permits of closer relations between the two; it permits of the introduction of system, flexible

indeed and varied, but in which there may be just so much of correlation of effort as shall warrant its being regarded as national. Once again the great problem of education, how to combine the claims of the individual with the claims of others (the State, if you will), is about to be faced on an extensive scale. For the handling of this problem two parties, the Board of Education and local authorities on the one side, and on the other the schoolmasters, will be asked to co-operate. It will be the business of the one to bring about the conditions most favourable for success, and of the other to avail themselves of those conditions with capacity and zeal. Intercourse between local authorities and the teacher will be more frequent and more direct than that between the teacher and the Board. It is with one aspect of the former relationship that this article is chiefly concerned.

Local authorities, it may be presumed, will be at pains to discover the brightest intellects in their area, and to pass them in increasing numbers through secondary schools. Now, the best brains in a State may well claim from it the highest education it can give in order that the art of government in all its forms, the pursuit of knowledge in all its higher branches, may not stand still, but advance. This education, which begins with the secondary school and ends with the university, has for its aim the production of the best forms of disciplined individuality. The individuality must be there, for only through it does man impress himself upon thought; the discipline must be there, for through it thought impresses itself upon man. The one is needed that there may be new ideas, the other that the new ideas may be right. It may be that it will fall to the lot of this or that man to have more important work to do in the world; it is difficult to conceive that it will fall to the lot of a class. Where the ideal is so high the performance will always be imperfect, but the more favourable the conditions the greater the degree of success. That the success may be at all appreciable two things are essential in the teacher—capability and an unselfish spirit, but of the two the latter is the more important. Success in teaching depends ultimately on the spirit in which the work is done. Whatever is said here is to be referred to this thought: if it is not true the contention fails. And the contention is that when the question is one of spirit, regulations in reference to it should be favourable, and not unfavourable, to its development. Since the control of the majority of local schools will pass more and more into the hands of local authorities, the nature of their legislation becomes all important to those who earnestly desire that the present movement in education shall not fail.

For local authorities, then, the problem is mainly two-fold: to obtain for secondary schools the presence of "men (and women) of high ability and culture," and to frame for them conditions of service which shall allow every one of them to express *himself* in his work. On the first of these requisites the opinion of educationists is unanimous. They recognise also that it is precisely in this type

of teacher that the shortage is most marked. "The career of the teacher does not hold out adequate inducements to men and women of energy and intellectual capacity; the former, in an ever-increasing degree, are diverted into other professions which offer better and more assured prospects." Thus the Memorandum of the Teachers' Guild, in the language of sober deliberation. If proof of the statement were wanted, it would be offered most convincingly in the smallness of the number of teachers who have registered under the permanent conditions. But it is not wanted; the fact is known. More than that, the chief remedy is realised. The profession of teaching will never be able to compete financially on level terms with some of the other professions. This does not matter greatly, since it offers something of the reward which helps to compensate the clergy for the modesty of their incomes. But it must compete on more level terms; and this, too, is realised. It will be here assumed that the historic work done by Prof. Sadler and others has convinced local authorities that an adequate supply of the right type of man is essential, and that to get it higher salaries must be paid.

But there is more to be done than this. The teaching profession is hampered not only by lack of funds but also by lack of respect. Of course, individual schools or individual men and women are held in high estimation, but it will probably be agreed that in England the profession is not really esteemed. It is beside the point of this argument to try to find reasons for this. What is very germane is to insist that the fact is a great source of weakness, and to urge that regulations for the profession shall indicate clearly that they aim at raising its status. Local authorities can render very valuable help here if their legislation shows that they pre-suppose that the men whom they wish to attract are gentlemen, with a sense of honour and duty, and a love for their profession. Assuredly it should contain safeguards against abuse, but its spirit should be that of inducement to initiative. "Laws," said Sir Philip Sidney, "are not made like nets—to catch, but like sea-marks—to guide." The marks once set, the mariner is free to shape his course within them. And the marks are never set as close together as possible, for that makes navigation more difficult, but as wide apart as is consistent with safety. Opinion is agreed that a large measure of latitude should be given to a headmaster to secure to him a proper control over the governance of the school, and to permit him to impart to it that individual tone which has been in the past so valuable a feature of secondary schools. The needs of the locality, and in particular those which his school is intended to serve, indicated to him at the outset, would be his guiding marks. The governing body, in conjunction with the Board of Education, would alter them from time to time, for their continuous interest is a most valuable help to a school, but the marks would be kept wide apart, and the actual course set would be his, not theirs.

But this impress of individuality expressing

itself under guidance, not restriction, would appear also in every detail of the working of the school. What has been said of the headmaster applies to the staff. The only difference is that their guiding marks would be closer together. Each member of the staff would have set before him the nature and the aim of the work he was to do, as well as its broad relationship to the whole work. Within these limits, and subject to the modifications that might be found from time to time necessary, he would not only be allowed, he would be expected to prove that he could mould his work, not suffer it to mould him. So far as he requires further guidance or is found to lack ideas or initiative, so far will he fail in the production of that disciplined individuality which is the essence of his task. Let me repeat that the spirit of a man's work is the important point. Local authorities will probably get capable men by paying higher salaries; no money payment can ensure the right spirit. It may, it often does, appear under the worst conditions, as it is possible for it to be absent under the best. But some conditions are more favourable to it than others, and of these the best are those which show that they hold the man himself in honour. Local authorities will render a great service to secondary education if they fearlessly adopt adequate and flexible scales of payment in which increments are made annually except for cause shown to the contrary.

If they do not do this they must fall back on the alternative of making increments of salary dependent on previous scrutiny of the master's work. If the nature of that work is such as has been outlined here, and if the type of man who is to perform it has been understood, will there be doubt as to which of these methods should be chosen? The men who may be made to work harder by a system which says in effect that they will not get higher payment until they have proved that they are working are exactly those who are not wanted. Even their harder work will not be of the right kind. Its best result will be that of the examination room. The man who responds to drive will rely upon drive. A system like this is not favourable—it is unfavourable—for producing the right spirit. In high-minded men and women who love their profession it will beget something very like resentment. It will fail, because it is framed for the wrong type of man, and will tend to produce him. Safeguard, of course, there must be. Examination of a carefully-framed scale will show that it provides suitably against slackness or inefficiency. The Council of the Teachers' Guild suggest the following:—

(1) *For men registered or qualified for registration, in Column B of the Register of Teachers, and teaching in secondary schools, an initial salary (non-resident) of £150, rising to a maximum of from £250 to £350.*

(2) *For women correspondingly qualified and teaching in secondary schools, the initial salary should be not less than £120, rising to a maximum of from £200 to £250.*

Teachers with special qualifications or occupy-

ing posts of special responsibility should receive salaries on a higher scale.

In fixing the salary of any teacher previous experience should be taken into consideration.

It will be seen that if this were adopted there might be in a school one scale or two scales, and that heads of departments would be paid higher salaries. A master in it, therefore, would find two, possibly three "barriers" in his career. He might be stopped at the end of the first scale or the second, or he might be passed over for headships. It would be the ambition of every man of capacity to go through one or more of these grades. And if the governing body reserved to itself the right of granting, on the recommendation of the headmaster, increments higher than those which obtained on the scale, the consideration given to incentive would be ample. The Council of the Teachers' Guild make no definite pronouncements as to increments. Prof. Sadler, who suggests a very similar scale to theirs, says "annual increments of £10."

One other point may be noted. Private scholastic enterprise is at present on the wane; public day-schools are increasing. Almost all of these will be large. The percentage, therefore, of men who obtain headmasterships will be correspondingly lowered. When this is borne in mind and a comparison made between the figures suggested here and those which obtain in government offices, it will appear that all that this scale offers is a modest competence. But it has this great quality, it is framed in the spirit of inducement; it pre-supposes honour, capacity, zeal. With those who have these it will succeed; for those who have not there is always dismissal, and it may well be used unsparingly.

Since it is only a modest competence that a scale such as this secures to a man, he will hardly be able to save. Local authorities, therefore, who establish pension funds framed on lines similar to those which mark the schemes adopted by the Merchant Company of Edinburgh and by other governing bodies will have made a just attempt to make the profession compete on more level terms with other professions. They will, moreover, have shown publicly that they hold it in honour, and by that fact they will have done much to make the public also hold it in honour. These are the means by which the government offices are attracting to themselves so considerable a proportion of the ablest men who pass through the Universities. Why should they not be equally successful with the teaching profession?

Tales of the Middle Ages. Edited by C. L. Thomson. viii. + 131 pp. (Horace Marshall.) 1s.—"The aim of the 'Romance Readers,' of which 'Tales of the Middle Ages' forms the fifth, is to provide children with simple reading-books, which are also an introduction to the great literature of the world." So says Miss Thomson in her preface, and it goes far to explain what the reader will find. Seven romantic stories are here told brightly and pleasantly, clearly printed, and with illustrations. They are certainly not commonly known stories, and the subjects, therefore, will be fresh to our pupils as they are at least to us.

TWO NEW WALL MAPS.¹

THESE two fine examples of a well-known series are well up to the high standard attained by the rest of the set. They are constructed on the same principle as Philips' Atlases of Comparative Geography, and in consequence reproduce on a large scale the same striking features of land relief. Despite the natural exaggeration consequent on the bold use of greens and browns and blues, they are as good or practical teaching as any maps we know, and while new, certainly form as effective an ornament as could be desired for the class-room walls. The main drawback we have discovered hitherto is that these colours—the blue especially—in course of time surrender much of their brightness, and consequently of their effect, to the influence of light. As this, however, applies practically to all wall maps, we do not consider it need be charged to the account of the present series; in any case, we should prefer to run the risk of the fading colours and display the maps always on the walls rather than attempt to preserve them by rolling them up and putting them away after each lesson. Half the value of a good wall map disappears if it is not constantly before the eyes of the class, ready to be referred to at times other than the lesson on geography pure and simple.

For the benefit of those teachers who may not know these "Comparative Maps," we append the following notes on their main features:

Size and Scale.—The "British Isles" measures about 6 by 5 ft. and 12 miles to the inch; "Asia," 7 by 5½ ft., and 95 miles to the inch. As the latter includes practically all Europe and all Egypt, the map might fitly be termed "Eurasia and Egypt," and used accordingly.

Colours.—Blue for sea in three tints for 50, 100, and below 100 fathoms deep. Green and brown for land under and over 1,200 feet above sea-level.

This arrangement at once emphasises the most important characteristics of land and sea, e.g., the British sub-marine shelf, the sharp declivity under the sea off the west coast of Ireland, the English and Irish lowlands, the immense highlands of Central and Eastern Asia, and the continuation of the great north Plain of Europe right across Siberia.

Indication of Towns.—Grade I signs in the "British Isles" for towns with populations over 500,000, 100,000, 50,000, 10,000 and under 10,000; in Asia, under 100,000 is the lowest grade. A good selection of names has been made, and there is no over-crowding.

Routes.—The chief railways are shown in black. This insertion of railways we do not think an improvement. The lines are too thin to be visible at any distance, and yet they are quite sufficient to cause confusion at close quarters. Moreover, they are illusive; they stop where the real railways by no means stop, and there are perforce important

¹ Philips' "Comparative Large School-room Wall Maps"—British Isles, 16s.; Asia, 18s.

omissions in small but thickly populated districts. This is just the sort of geography which should be left for working up in the pupils' school atlases to which the main land features of the large wall map act as an effective guide. *En passant*, we may remark that the railways appear to be well selected, up-to-date, and correct as far as they go. The famous mistake made by the "Encyclopædia Britannica" (vol. 34, map 37) and many lesser geographical authorities, when they ran the Trans-Siberian railway through Tomsk instead of 50 miles to the south of it, is not repeated. The new Tashkent-Orenburg route is also shown, though not the S. Petersburg Vologda-Viatka connection, which is eventually to add a double European terminus to the great T. S. R.

On the other hand, the steamer routes as indicated in the maps by dotted lines are useful, especially, for example, those connecting the various Channel ports and other European centres of trade with the British Isles. The knots are marked along each route in black figures.

Insets.—Each map contains insets. That of the British Isles has two—one, the usual Orkneys and Shetlands, on the same scale as the general map; the other, three sections from west to east across the islands; (1) from the Isle of Rum to Fife Ness; (2) from Carnarvon Bay to the Wash; and (3) from the Kerry Mountains to the Wicklow Hills. They are useful enough in the hands of a good teacher, but very deceptive as they stand. The vertical exaggeration is thirty, and this has the usual effect of impressing the ignoramus with the notion that nothing short of a balloon could possible carry him (or her) from the Atlantic to the North Sea. As he knows this is not so, his faith in "sections" is impaired.

Asia also contains two insets—(1) a political map on one-fifth the general scale (a very useful and beautifully clear inset); the other, a section from South to North (R. Godavari to the Siberian Plain), which, as it is drawn to an exaggeration of fifty, emphasises the illiveness which we have noted in the British sections.

HOW TO STRENGTHEN INDIVIDUALITY.¹

By FRANK FLETCHER, M.A.
Master of Marlborough College.

THE problem is one in which it is easier to state the difficulties than to propound a solution. But a mere exposition of the difficulties may be not without its suggestiveness; if we can establish where the dangers lie, we shall have done something towards avoiding them. How may we so train the young that each of them shall have in his own heart and hold fast in his conduct an ideal of right-doing independent of, though not necessarily opposed to, the ideals of his fellows, so that he may rely for his standard of right and wrong not merely on that set by the society in which he lives, but on the guidance of an

enlightened conscience? To develop strong individual characters of this type must be the aim of all of us to whom a "cure of souls" has been committed, whether parish clergy, or teachers, or above all, parents. If I state the problem mainly from the point of view of the schoolmaster, it will not be because I regard this as its only or most important aspect, but because I can speak with most conviction and least presumption about my own sphere; and the problems of the one class are not without their bearing upon those of the other two.

No one who is entrusted with the education of the young can approach his task, if he have any earnestness in him, without a deep sense of the vital seriousness of it. The material with which he deals is in its most plastic state; his charges are at the age when habits are most easily formed and leave the most enduring mark upon character. It is, therefore, of fundamental importance that the growing soul should be shielded from influences which might give it a bias towards evil; and to deliver our charges from evil during the years of boyhood will be among the foremost aims of parents and schoolmasters alike. But it is well to remind ourselves that, after all, this is only a means towards an end, and not an end in itself. We have done something, certainly, if we have protected our boys from wrong-doing in their most susceptible years; but we must do more than keep them innocent; we have to lay the foundations of manly character.

It is possible so to fence in the young as to make failure for the moment almost impossible, shutting out by careful supervision all sights or sounds or associations that can mislead them. With young children this is, I am sure, the right course; but to continue the method beyond childhood is to secure innocence at the expense of freedom; and without freedom individuality cannot develop nor character grow strong. It is no uncommon experience to find that boys from the strictest homes fail most unhappily when they leave the home atmosphere. One of the most vital problems of education is how to preserve the right mean between culpable negligence and the opposite extreme, less fatal but none the less perilous, of over-strictness.

We are faced, in fact, by the old and familiar dilemma. On the one hand we pray that we may not be brought into temptation; on the other hand, it is through the victorious conflict with temptation that character is strengthened and perfected.

"Was the trial sore,
Temptation sharp? Thank God a second time!
Why comes temptation but for man to meet
And master, and make crouch beneath his foot,
And so be pedestaled in triumph? Pray,
'Lead us into no such temptations, Lord!'
Yea, but, O Thou whose servants are the bold,
Lead such temptations by the head and hair,
Reluctant dragons, up to who dares fight,
That so he may do battle and have praise!"

Our Lord has taught us by His precept to pray for ourselves that we may not be led into temptation; for it is only if we shrink from it in the humble consciousness that we are weak that we can be strong to meet it when it comes. But He has also taught us by His example to ask for those who are entrusted to us, not that they may be "taken out of the world," but that they may be "kept from the evil," not that they may escape temptation, but that they may overcome it. Therefore, I think that for all of us, parents and schoolmasters alike, the right aim will be, not to make temptation impossible ("it must be that offences come"), but rather to secure that with every temptation there shall be a "way of escape."

On this principle I reject, as a public schoolmaster, not only the method that prevails, I believe, in Continental schools,

¹ A paper read at the Devotional Meeting of the Church Congress held at Weymouth, October, 1905, forming part of a discussion on "Conscience."

which seeks to secure innocence by perpetual supervision, but even the doctrine that if you are to keep the young out of mischief, it can only be done by filling every moment of their day with compulsory occupation. That is a far higher method than the other, and it is far less evil than a system of "*laissez faire*;" indeed under certain circumstances I would adopt it resolutely rather than expose boys to greater dangers. But it is at best a *pis-aller*. We need more freedom of choice if our boys are to grow into strong and independent men.

Our aim is to develop character by a gradually increasing freedom. Having first, to the utmost of our ability, so ordered our organisation and the external circumstances of our little society that vice may not be encouraged nor the path of virtue and honour made difficult, we seek by confidence and freedom, and some measure of self-government, at once to build up a healthy community and to prepare the way for the wider life with its looser ties and vaguer duties that must come afterwards. Our method has been admirably expressed in the pregnant saying of Edward Thring, that "trust should be unlimited in action, suspicion unlimited in arrangement."

The question how much freedom can be allowed, and the detailed discussion of what is meant by suspicion in arrangement, would be outside the limits of this paper. But there is one factor in school life which intimately concerns our present subject, and which I do wish to discuss in this context. I refer to the force of public opinion, which plays in our public schools an even greater part than in society at large, because the community is smaller and more compact, and the units of which it is composed are undeveloped boys, and not full-grown men. The fear of doing anything unusual, of rendering himself conspicuous by not conforming to recognised conventions, or by refusal to accept recognised standards, is as potent in a boy's mind as the fear of being out of the fashion, of being thought peculiar, is to many adults. This is a force which we who are set over these communities must necessarily take into account; and we shall try, if we are wise, to make of it an ally and a fellow-worker in the task of fostering good and banishing evil. We know that it is but lost labour to toil early and late for the saving of individual souls by personal influence, if we are not at the same time watchful to secure, so far as may be, that the general atmosphere shall make in the main for righteousness and not for evil. We shall therefore think and speak often and earnestly about what we call the "tone" of the school; and it will be among our foremost aspirations and prayers that the spirit of the place may be honest, and pure, and Christian, and that it may (in the words of a great educator) "lay a stronger and more compelling hand" year by year on all who enter the school. We have rejected the method which sought to protect our boys by making vice impossible, and we try rather to make it distasteful and unpopular. The former system, we said, was fatal to independence of character; I am afraid that in this system too, there is danger, though a different and subtler one.

For this instrument of public opinion may easily prove a two-edged tool. If we can secure that boys pass through school life unscathed, by means of a public opinion which discourages sin and makes vice difficult, that is a great achievement. But it is only half our task; we aspire to much more. It is not enough that our boys should have passed through boyhood without falling below a certain standard of right conduct; we wish also to secure that when they pass out of the surroundings of boyhood they may have something within themselves, something of their own, which shall enable them to discern for themselves between right and wrong and hold fast to higher ideals amidst lower and looser standards of life. The forces which make temporarily for righteousness do not necessarily develop individuality. We may find that we have, after all, only been

riveting the fetters of public opinion instead of developing the free growth of a Christian conscience. It will be the condemnation of our work if our boys, when they go out into the world, acquiesce in the morality of their companions whatever it be, if we have, after all, only taught them to follow the line of least resistance. If our building is to stand the storm and rain, it must be based not on the sandy foundations of "good form" and "gentlemanly conduct" and what "everybody does," but on the rock of righteousness and conscience and God's will.

This is not a danger which is confined to public schools; it has its close analogies in the home and in the parish. I am more concerned here to emphasise the peril than to show how it may be avoided. But something may well be done by connecting a boy's religion and morality not merely with his membership of a community but with whatever he has of individual associations, above all with his home. It is on the side of personal religion, especially at moments of special opportunity such as Confirmation, that the solution must be sought.

Personal religion and personal influence; these are perhaps the main factors by which individuality can be strengthened. I have spoken so far of the social aspect of the problem; there remains the equally important personal question. We have seen that the influence of environment tends rather to check than to strengthen the growth of individuality. It is to the personality of the teacher that we must look to counteract this. Let us consider for a moment what he can do to help.

Two things are required of him who would strengthen individuality, whether as clergyman, teacher, or parent: first, that he should have individuality himself; and secondly, that he should keep that individuality in the background and not force it upon his charges. First, individuality; secondly, self-effacement. The first point requires no labouring. If a man is to teach others to think for themselves, he must himself have some independence of thought. His boys must feel that what he says and does is prompted by conviction and not mere convention, that he is not merely following or repeating by rote the thoughts of others, but is guided by some inner principle, above all by a spiritual principle, of his own. He must "teach with authority, and not as the scribes."

But "teaching with authority" does not mean dictating to the consciences of others, or forcing our own personality upon them. What we have to do for the young is not to build their characters for them, but to guide them to build their own, to develop their individuality, not reproduce ours in them. If we forget this, our efforts to deliver our brothers are foredoomed to failure. In the German legend the dwarf who has brought up Siegfried that he may slay the dragon and win the treasure tries vainly to forge for him the sword which shall ensure him victory. Every blade that the dwarf makes shivers at the youth's first stroke. But when Siegfried himself takes the fragments and forges his own weapon from them, he has a sword that will endure, and with it he goes out and wins the victory. By personal influence and help we may do much; but all of us, clergy, teachers, parents, need to be on our guard against the temptation to forget our limitations, against the danger of losing sight of the best interests of our charges in the gratification of the sense of power, the fascination of exercising influence over others, perhaps the most insidious form of selfishness that can assail us. Our Lord Himself, the Divine model for all teachers, would not dictate to the consciences of His disciples. Even in His case it was "good for them that He should go away." It will not be what "flesh and blood" has revealed, not our own poor words and thoughts that we shall look to see reproduced in the characters of our boys, but the will of our Father which is in heaven, revealed within their consciences by a process of gradual and secret conviction. For, in truth, it is so that character and individuality must grow,

not with visible results which we can count and for which we can claim credit, but by a silent and secret growth, "occullo velut arbor aevo."

It is not as a teacher only, but as a trainer of teachers, that our Lord is revealed in the Gospels; and He has given us the guiding principle in the parable which He spoke to His disciples after He had given to the multitude the parable of the Sower. To the multitude, the taught, He gives the parable which emphasizes the responsibility of the learner, on whom alone the fruitfulness of the seed depends. To His disciples, the teachers, He gives the parable of the seed growing secretly, with its warning that what concerns them is the sowing of the seed, not the process of its growth. It is for them, and for all who teach, to see to it that the seed they sow is good seed, the true Word; the growth is in God's hand not ours, and in His good time it will come. Therefore we shall endeavour, whether with children or pupils or parishioners, so to use the instruments of healthy public opinion and strong personal influence as to create a conscience and character independent of both; we shall welcome without jealousy and with broad tolerance other influences and other ideas than our own; and we shall regard as the consummation of our endeavours not loyalty and personal affection for ourselves, but loyalty to righteousness and love for Christ. Parents, teachers, clergy, we can at most guide our charges into the Presence, and there leave them.

IDEALS OF STUDY.¹

By SOPHIE BRYANT, D.Sc.

Headmistress of the North London Collegiate School for Girls.

IT is not very obvious to me why I should have been honoured by an invitation to give the opening address of the session to an audience like this—an audience endowed with so much knowledge of the noblest among the practical sciences that, between admiration and awe, I stand abashed before it. That greatness, however, has been thrust upon me, and I, coming out of the sister realm of education, will do my best, with such store of experience as I have therein accumulated. It may not be amiss that we should for a brief space think together on those ideals of study under the control of which we shape our work, you in your school of medical studies, with its analogies to schools of special studies in other branches, I and those who labour with me in the sphere of general education outside.

Now, an ideal of study to be helpful to the student must primarily be conceived, not teleologically as a course of reading, or even of research, but in its psychologic essence as a living growth, rooted in the primitive intellectual interests of human beings. An examination syllabus prescribed by the University describes an ideal of study in the teleological sense, but I am here concerned with that subtle development of powers and interests and aspirations in the student's mind which is to him at once the reality and the motive of the achievement proposed. People of very vivid intellectual life do not always understand how dead a scheme of learning seems to the mind that has no points of attachment to offer it. These points of attachment are what we call interests in the subject. We see these interests simply shown in the healthy, capable little child: (1) the interest in knowing what things are and why they are so—fact and cause; and (2) the interest in making things other than they are and in some way better. It is out of these interests and in accordance with the development of them that ideals of study in all their variety and complexity grow, and it is by the cultivation of the interests that the life of the ideals

is made healthy and strong. Briefly we may call them the theoretic interest which makes direct for knowing, and the practical interest, of which doing is the aim.

There is a type of mind—not common but quite familiar—in which the theoretic interest dominates all else outside the sphere of egoistic and altruistic essentials. This is the pure interest in knowledge as such, of which all normal human beings have more or less some share. What things happen, how they happen and why they happen, fact, analysis and cause, these are its objects of inquiry; and out of such simple beginnings as are familiar in the intelligent curiosity of the little child there grows the ideal of knowledge, and we come to know that we seek—by energy of thought, by patience in observation, by diligence in study, by enquiry unceasing—to see Human Life and all Nature outside it in the reasoned and therefore intelligible system of Science.

The ideal of knowledge is like an inaccessible mountain peak visible from many different points of view. All of us, whether far off on the distant plains or with a nearer view from the foothills and minor peaks by which it is approached—all know that the ideal in itself is one, though we see it differently according to our circumstances. Our various interests in knowledge are the expression of those circumstances. They differ according to intellectual types of brain and habit. We are born as it were on the top of one particular foot-hill, or we have found our way to that point. Take this contrast only as example. Built in one way, we are as it were full of eyes without, rejoicing in their exercise, prompt to see and to think about things seen. Built otherwise, we are full of eyes within, finding our happiness in the exercise of our formative ability, strong in the regions of abstract thought. Some there are indeed, like the four beasts in the Book of Revelation, full of eyes before and behind and full of eyes within. These are the leaders of knowledge in every age.

As for habit, it is of course the ally of brain type. It is the agent by which in education we seek either to counterbalance exaggerations of congenial type by developing a supplementary brain habit—as by setting the dreamy, absorbed child to do something for which close observation is required—or to increase the utility of the type by habits auxiliary to it, or even by emphasis of its natural ability. Speaking generally, we like to do whatever we can, by nature or habit, do with ease. As Aristotle might say, the act is the natural expression of the faculty, and the faculty grows by practice in the act; but the sign that the faculty is well grown is the pleasure with which the act is done. We are all apt to have dominant tastes corresponding to our powers, and universally our highest efficiency corresponds to this conjunction of power and taste.

In this pleasure-loving age, however—an age when pleasure pursuit is treated almost as a religion—it is more than ever important to remember that the taste, *i.e.*, the desire, for a pursuit may, and happily often does, exist without any special facility for it. Happily, I say, as indeed otherwise we should nearly all in course of time become specialists of a hopelessly dreary type. Now I suppose no person can be interested in a pursuit which is entirely beyond his powers; though, from motives of duty, of affection or of interest in some ulterior end, he will make the attempt. The practical question is as to the development of interests which will give a lead to dormant powers and nurse them into active life. Herein lies one chief work of education, to be accomplished by playing on the personal, social, and moral motives under the influence of which we make ourselves do, and finally prefer to do that which taxes our powers, and is hard. Persons of energetic will indeed often choose the difficult *per se*; their interest is in being able to do what they will. This is mixed with conscious pride as a rule, but sometimes it is purely instinctive. Such instinct is

¹ Address delivered at the London School of Medicine for Women.

as the salt of character ; indeed, it is much more, it is the very germ of character itself. Other motives also there are. Persons of social disposition have interests in sympathy with their companions, or more markedly with one whom they specially love or admire ; interests thus manifested simulate very closely, and may pass over into the genuine taste which is the expression of natural gift. Duty in the form of discipline is, of course, a universal motive to interest in uncongenial pursuits, and where it proceeds as strict self-discipline it is only limited by brain possibilities.

These motives have direct efficiency. Nevertheless, in a sense it may be said that the normal road to the development of interest is through seeing the thing to be done as a means to the achievement of some interest already dear. Education proceeds with the minimum of strain and the maximum of permanent efficiency when it works on the individual mind in the main as a development of interests in order of their natural strength, the weaker being practised as a means to the satisfaction of the stronger until it is strong enough to be self-sustained. It will, of course, be evident that this procedure will result in a life habit for each individual highly conducive to his moral as well as his intellectual efficiency.

Let this suffice—I fear, too, that I have digressed somewhat—let this suffice for hints in a subject so large as the variety of forms which the interest in knowledge takes, and the corresponding variety of aspects taken by the ideal of knowledge, according to individual idiosyncrasies of character and circumstance. It is still with knowledge in itself and with the pure interest in knowledge as such that we are for the moment concerned. In education, indeed, it should never be forgotten that this pure interest working alone would not—human nature being what it is—have built up the structure of knowledge as we have it in all its parts. None the less, I think we may take it (1) that the central object of general intellectual education is the development of the pure knowledge interest ; and (2) that the aim is to develop it in general as a well-balanced interest in all that human beings care to know. It will generally be conceded, moreover, that such an education is on the intellectual side the best foundation that can be laid for special studies—professional, commercial, or industrial—to follow.

As for the moral side, we are all, I suppose, agreed about that, perhaps too easily, and therefore too lightly agreed. It is above all necessary that conscience, industry, responsibility, the habit of helpfulness, the desire to serve, should be developed to form the backbone of character. This is the highest educational end in itself ; it is also the best guarantee of intellectual efficiency. The moral interest makes, as we have seen, for the intellectual end wherever the claims of duty can be shown to be involved. This is on all fours with another fact too easily forgotten in education, *i.e.*, that where the intellectual interest is weak, any convenient practical interest may be used, in order that the intellectual interest corresponding may be developed as means to the practical end.

This leads us to consideration of the practical interest in general. To the man whose mind is centred on some result to be achieved—the cure of a disease, the sanitation of a town, the building of a ship, the construction of a mountain railway, the utilisation of a waterfall as a source of energy, the invention of a flying machine or a noiseless, pleasant-smelling, dust-allaying motor-car—to such a man the interest of any knowledge that will help him to his practical end is immense. Knowledge to him is power to achieve human ends. He wants to understand how things happen in order that he may by his agency cause them to happen or not. Primarily he is a student of causes through his interest in their effects, the analyst of facts through his interest in their persistence or modification.

Knowledge is to him the necessary ally of skill ; the couple stand before his mind as the essential constituents of power, power by which man bends Nature to his will, using her forces for the amendment of her ills, or for the fulfilment of his ideas beyond her. For the amendment of Nature's ills the physician searches out Nature's secrets. The practical physicist seeks by understanding and controlling her to add to her scant supply of comfort as a home for men.

In our day the variety and complexity of human ends is very great, every advance in science having brought with it new power to achieve, with the desire of achievement and enjoyment corresponding. Once we illuminated our houses with candles, and did all our mechanical work by direct mechanical means. In those days we knew not the transformation of energy and the subtle secrets of the electric current, neither did we crave for the elaborate conveniences of controlling switches, telephones, spring-cleaning by machinery, traction without horses, fire without fuel. So there was neither an army of physicists engaged in research, nor a band of electrical engineers applying science to the increase of human comfort, nor a whole world of pampered human beings demanding luxuries and comforts of many sorts, each to be supplied by the pressure of an appropriate button. Now there is a specialisation of studies and industry relative to every branch of physics, and specialisation by branches within this again, these secondary lines of specialisation being determined by the particular practical interests to which they are related. And so it is all round ; human needs and desires and hopes of immunity from suffering multiply and become more exacting as the knowledge and skill to supply them increase.

In the region with which your own practical science is concerned there is, of course, no limit, and never was, to the human demand for health, more health ; but it is by the progress of your knowledge and skill that this vast demand has become developed into the multitude of special needs of which we know to-day. The primitive man knows disease in general as the opposite of ease, but it is you who have discovered for him all the immense variety of his ailments and consequent wants. Thus in every way it is the natural order of things that the tendency to specialisation of practical interests runs far ahead of such tendency to specialisation as the limits of human intellect imposes on the interest in knowledge as such. And in all this necessary specialisation we find the starting point to a train of reflection that suggests the desirability of keeping alive the round of theoretic interests the more, in view of the large demands that must be made for concentration in the professional and industrial life of all who *serve* the world by their brains.

This is, I believe, less likely to be forgotten in relation to the pursuit of medical studies than in almost any other special department of intellectual work. The need of a high standard in preparatory general education has always been steadily kept in view by the leaders of medical education, and from the nature of your work the need is easily apparent. A highly educated person whose intellectual interest is closely limited by his special work is, after all, a somewhat inhuman kind of person, apt to be in general out of sympathetic touch with other minds. It will be more evident to you than it is to me that in dealing with the sick and suffering the highest knowledge and the finest skill lose even as knowledge and skill when administered by a human nature thus dulled and chilled to human touch. It is greatly to be hoped, therefore, that the traditions of medical schools and the reading habits of medical men and women will be maintained, so that, in spite of the growing demands of their practical interest in highly specialised knowledge, the theoretic interest in general may not wither in their breasts.

On the other hand, it should be considered whether there is not ahead of us in general education a problem hitherto much neglected. True as it is that the essential contribution of general intellectual education to the outfit of the individual is the cultivation of the theoretic interest, it may be no less true that, partly as a means to this very end, and partly as an end in itself, the development of the practical interest in some form should be clearly conceived to be an object in education from the beginning. I do not, of course, mean by the practical interest in this context all that we understand by duty and morality. I take it for granted that the moral end—the interest of personal and social ethics—will not be overlooked. For the moment, we are dealing with practical interests and the practical interest in knowledge as power in the sense of the artisan, the practical chemist, the engineer, and the doctor. The doubt I have in my mind is whether in all our zeal for education—technical education included—we are at all as clear as we ought to be about the psychology of its natural beginnings in the human mind. Certainly I am not clear, except that there is a problem to be solved. The solution may perhaps be conceived as the finding of the true mid-channel course between the Scylla of forcing skilled work on children before their powers are ripe, and the Charybdis of neglecting their practical nature altogether.

Every child should be interested in doing something. Most children are immensely interested, and for those who are not motives should be found to stimulate such interest. To do is on an average at least as natural as to know, and for both impulses there is the danger that they will be too easily satisfied, *i.e.*, that they will be satisfied without the real achievement of their end. It is the educator's business to see that the step is taken from interest in doing the thing to interest, with determination, in doing it well. This is half the battle, and a good general will make the most of his forces by leading on the child's interest in doing to fasten on things that obviously fail of their purpose when done ill. A boy who makes a mouse-trap, for instance, that does not catch the mouse has not made the mouse-trap well.

The other half of the battle remains. From the interest in doing the thing well springs interest in knowing how it is done. To know how, may be entirely by rule and imitation, or it may be also or entirely by understanding the causes at work. Here we have the parting of the ways between the mere mechanic and the scientific workman. Average human nature unaided follows the line of least resistance, to do mechanically, and the educator is indeed worthy of the name who turns all his pupils into scientific workers eager to do well by understanding what they do.

It is obvious that the neglect of the practical interest in the education of the practically minded is the loss of great opportunity for the cultivation of the scientific habit. The very essence of the old-fashioned grammar school tradition was that boys should be trained morally and mentally by discipline as such—the discipline of literary or any other kind of studies—without the least regard to their ideas—boys, of course, have ideas—of what they would like to do in life. The result in discipline may or may not have been successful; the result in scientific outlook on things and practical intelligence in affairs was inevitably what we know it to have been—dislike of knowledge all too common, and well-nigh universal contempt. The remedy is in raising up a generation carefully trained throughout to associate practical excellence with understanding in all the common every-day pursuits, as well as in the special business of life. That for the practically minded an increase in theoretic interest will grow out of such education of the practical interest no one can doubt.

I suppose it is a fact that practically minded persons are

in a majority, that those in whom the pure theoretic interests lead are, in comparison, few. Nevertheless, there are such persons, and in some of them the interest in doing things is congenitally subnormal. This is a defect of serious import not only as regards serviceableness in life, but even as a bar on the full development of the theoretic interest itself. For not only is doing dependent on knowing, knowing is also dependent on doing, as the progress of science by collection of facts and by experiment makes more apparent year by year. The persons who love to know but hate to do can be—relative to the advance of knowledge in our day—but very imperfect knowers at the best. Nor is it enough, though it is good, to attempt their cure by putting them through a course of general elementary science at school. This thing we should do, but not leave other things undone. The knowledge-loving child will fall into an interest in doing for the sake of knowing, and thus do well enough probably in his experimental science. To find out, to discover, this is by hypothesis his leading interest. But will he care to *apply*, will he think of applying his science to the common practical things of life, the things in which he takes no natural interest? It is obvious that the problem in his education is to interest him first in the application of knowledge to practical things as a development of knowledge, and hence to provide a natural means for the growth of the practical interest itself.

It is not that these two contrasted types need separate treatment. On the contrary, they should be treated together; they will educate each other by example and sympathy. For both there is needed a double appeal to the practical on the one hand, and the theoretical on the other; and in each case the interest which is stronger helps that one which is more weak.

Thus my conclusion is (1) that there should be in every person's education provision for some practical work of an obviously useful kind, such as carpentry, cooking, housewifery, agriculture; (2) that it should be of such a kind as to require intelligence of an all-round scientific type, not merely mathematical, for instance, but involving problems from the concrete sciences; (3) that to this end it should be of a somewhat miscellaneous character, such as would fit a person, boy or girl, for managing a house or a farm without servants in a remote district far from shops; (4) that it should be associated with the regular instruction in elementary science, but more by way of sympathy and general sense of mutual dependence than by any parallelism of courses.

And thus the two ideals of study may from the beginning help to develop each other. The complete student tends to conceive them as one, the ends of practice ever formulating enquiries which are the points of departure for new developments in science, and the applications of science ever leading to visions of development in art. In our imperfection we may dispute under which king we will serve, but the more loyal we are to the king of our choice the more surely in time we come to see that neither can be served as we would serve unless we bow the knee to his consort also.

The Song of Hiawatha. By P. T. Creswell. xv. + 191 pp. (Blackie.) 1s.—There are not too many educational editions of this poem in the market, and the editor of the present one is to be congratulated on a capital performance no less than upon the choice of a subject. The introduction is a good literary sketch both of Longfellow and his poem, brief but complete, readable and interesting. The notes are numerous and admirable. An appendix dealing with the metre of the poem is of interest, because the charge of monotony which can so easily be brought against Longfellow's measure is explained by it. There is a good vocabulary.

THE REMUNERATION AND TENURE CONDITIONS OF TEACHERS IN SECONDARY SCHOOLS.¹

THE Council of the Teachers' Guild have, for some time past, viewed with anxious concern the short supply of men and women now entering the teaching profession, especially of those who possess good academic qualifications; and being convinced that this evil, if unchecked, is likely to carry with it serious consequences to the nation at large, they desire to invite attention to the following statement:—

It is in secondary schools that this deficiency in the supply of qualified teachers is most grave. The number of university graduates with good qualifications who offer themselves for vacant posts in these schools is wholly insufficient. The career of the teacher does not hold out adequate inducements to men and women of energy and intellectual capacity; the former, in an ever-increasing degree, are diverted into other professions which offer better and more assured prospects. There is a real danger that the shortage in the supply of teachers will be met by the acceptance of a lowered standard of intellectual equipment and general culture.

Two main causes are, in the opinion of the Council, responsible for this state of things.

First, the salaries paid at present are too low as compared with the remuneration which prevails in other professions. Those who by a long and, in many cases, expensive course of preparation have been fitted for the responsible and exacting duties of the teacher, and upon whom great and growing demands are made both in the way of intellect and of character, may reasonably look for a life of modest comfort. But with the existing rates of payment even this prospect is too often absent; while any provision for the future is almost, if not altogether, beyond their means.

The Council accordingly suggest that the rates of salary should, as soon as possible, be the following:—

(1) *For Men, registered, or qualified for registration, in Column B of the Register of Teachers, and teaching in secondary schools, an initial salary (non-resident) of £150, rising to a maximum of from £250 to £350.*

(2) *For Women correspondingly qualified, and teaching in secondary schools, the initial salary should not be less than £120, rising to a maximum of from £200 to £250.*

Teachers with special qualifications, or occupying posts of special responsibility, should receive salaries on a higher scale.

In fixing the salary of any teacher, previous experience should be taken into consideration.

In the opinion of the Council these are the lowest terms that should be offered if teachers are to be found who will be fitted to carry out their responsibilities in the immediate future.

The Council are further of opinion that the salaries of assistant-teachers should, in all cases, be fixed and paid directly by the Governing Body; also, that when salaries are not paid by the term, or half-term, the contracts should be so drawn that the teachers should not suffer any detriment thereby, *i.e.*, they should in all cases receive at the rate of a third of the annual salary for a term's work.

Provision should also be made for retiring pensions, both for heads of schools and for assistants, in all cases by joint contributions from teachers and governing bodies.

But, in the second place, it is not only the rate of remuneration, but also the conditions of tenure which are highly unsatisfactory. Under this head the Council hold to the views which

they have already published. They are of opinion that, for the dignity and general welfare of the profession, and in recognition of the fact that an assistant-teacher works for the community rather than for an individual, it is desirable that he or she should be *selected* by the headmaster or headmistress of a school for one (or two) years of probation, and if recommended by the headmaster or headmistress for a permanent appointment, should be *elected* to it by the Governing Body of the school. Dismissal should be at the hands of the same body, and an appeal should lie either to the local educational body or to the Board of Education. An appeal should also lie to one or other of these bodies in the case of the dismissal of a headmaster or headmistress.

The Council hold that, in all cases, both heads and assistants should be engaged under written and stamped agreements.

Finally, they are of opinion that the clauses in the schemes of endowed schools, whereby heads and assistants are dismissible "at pleasure," are objectionable, and that in their place should be substituted clauses designed to carry out the views already expressed by the Council.

HISTORY AND CURRENT EVENTS.

OUR thoughts have been turning this year to the events of a hundred years ago. In any case, we should naturally, in these days of voluntary societies urging the importance of our navy and its work, be celebrating the victory-death of Nelson at Trafalgar. And the great victory won by our far-eastern ally in the Straits of Tsu-Shima has emphasised the parallel between the two years. Both victories were decisive. The battle of Tsu-Shima practically ended the recent war, and, though we were in 1805 only at the beginning of our war with Napoleon, it was never necessary after 1805 to meet a French navy in full force. Our celebrations were modified by the fact that we are now on good terms with France, and there was even more recognition on this occasion that we were remembering ancient history than in 1888, when we recalled the defeat of the Spanish Armada. Then we made a respectful bow to Spain; now we waved the flag of France as well as our own, and sang her National Anthem. Are we becoming more civilised? and will Russia and Japan a hundred years hence celebrate the victory of this year as harmoniously?

THE sentiment (can we call it a principle?) of nationality, which, born in the Napoleonic struggles, has dominated Europe, and indeed the world, ever since, is working out results of various kinds. Sweden and Norway, closely allied as they are by blood, have parted company, though, owing to their common fear of Russia, it is in an astonishingly friendly way and with arrangements for possible common action. Hungary is quarrelling violently with "Austria" because the fear of the Turk, which used to bind the two together in unwilling alliance, has passed away. What is the fear which to-day prevents a final dissolution of the dual monarchy? Greeks and Roumanians living mingled in territory still "governed" by the Turk are constantly massacring one another, and all Europe cannot keep them at peace or remove the cause of their hatred.

THOSE dominions of so great extent that we have fallen into the habit, quite oblivious of the etymology of the word, of calling Empires exist only by allowing much free play to their component parts. In the chaos into which the Russian empire has apparently fallen, we are therefore not much surprised to find that the Tartars and Armenians, who are normally engaged

¹ A Memorandum on the subject of the Remuneration and Tenure conditions of Teachers in Secondary Schools, issued by the Council of the Teachers' Guild of Great Britain and Ireland.

in mutual warfare, have recently made a formal treaty. And the British Empire is not free from mutual jealousies between its component parts. We hear, for instance, of disputes between Newfoundland and Canada on questions of boundary, disputes similar in nature to those in the same neighbourhood which caused war between France and Great Britain during the first half of the eighteenth century. And there is a standing quarrel between the British Indian Government and South African colonies as to the admission into those colonies and treatment of the natives of our Indian dependency. The Viceroy recently forbade coolies to be migrated to the Transvaal and Orange River, because these colonies refused to treat other Indian residents better than formerly. Dundee is suffering because cheap labour in India is ruining its jute industry. If it were not for the *pax Britannica*, what quarrels would ensue!

"GENERAL" BOOTH'S recent proposal to send out five thousand families to Australia if lands could be found for them, is interesting as an illustration of what work can be accomplished in these modern days of easy communication by a society which has risen from humble beginnings to be an international institution. In many respects, the Salvation Army resembles the Church which acknowledges the spiritual authority of the Bishop of Rome. But this latest proposal reminds us of events of very long ago. Not to speak of the "wandering of the nations" which transformed Europe in the fourth and immediately following centuries, we are reminded of the wholesale deportations of the Eastern monarchies. When the subjects of the Kings of Israel and Judah were taken to the plains of Babylonia, the measure may have been one of political expediency, but that the justification for it may have been as economic as the most modern of emigrations appears from the fact that only a remnant returned to rebuild Jerusalem, and that the rest (*pax* our Anglo-Israel friends) found it better to remain in their new homes.

ITEMS OF INTEREST.

GENERAL.

SIR WILLIAM ANSON delivered an address, as president of the Salt Schools, Shipley, on September 29th. During the course of his remarks he said there are two conflicting views as to the character of the education which should be given in schools. There is the view that education must be liberal, that the student must be brought into contact with great masterpieces of literature and acquire a general knowledge of history, and, on the other hand, there is the commercial view that the students must learn modern languages because they have a present commercial value, learn science because it is supposed that a knowledge of the principles of science is capable of being turned to some immediate account. The result is, he continued, that the unfortunate students are not made to understand that if their education is a liberal education it can, nevertheless, be turned to the development of their faculties, and not merely to acquainting them with authors in whom they may not perhaps be particularly interested. In the endeavour to combine in some schools the liberal and the commercial qualities in education we have obtained a curriculum of study so overloaded that the mind of the adult fails in the contemplation of it, and the student becomes hopelessly puzzled and confused. In some of our great schools a boy is expected to learn at the same time Greek, Latin, French, science, arithmetic, Euclid, algebra, history, geography, and divinity.

If Sir William Anson was reported correctly in *The Times*, from which we have taken the substance of his remarks, it is difficult to agree with his definition of a liberal education. Few persons will admit that, though we have come in contact with great masterpieces of literature and have acquired a general knowledge of history, yet, if we have no knowledge of the world of Nature, we are far from being liberally educated. Moreover, it is difficult to see how, without an acquaintance with modern languages, we can come in contact with many masterpieces of literature which have profoundly influenced human affairs. There are, we are glad to know, many schools where modern languages are taught not for their commercial value alone or primarily, but as subjects of general culture; and many schools, too, in which the pupils are taught the principles of science, not in order that they may turn these generalisations to some immediate account, but by them be led to reverence truth and to learn humility. No subject has a monopoly in bestowing culture, and to disparage one branch of knowledge is not the way in which the claims of another study are advanced.

THE memorandum (see p. 42) on the subject of the remuneration and tenure conditions of teachers in secondary schools, recently issued to all education committees and county councils by the Council of the Teachers' Guild, deserves and will, we hope, receive earnest consideration. For some time past the number of educated men and women attracted to the teaching profession has been falling off, and, in view of the low salaries and the highly unsatisfactory conditions of tenure which prevail, this is not surprising. It is difficult to see how the salaries are at present to be improved. On one hand county councils, as in the case of that of Devon recently, find themselves unable to levy rates for secondary education; on the other, we have the Parliamentary Secretary to the Board of Education admitting that the sum spent in secondary education is ridiculously small, but pointing out the great financial pressure, and that when the income tax is a shilling in the pound or more it is not easy to get money for any purpose. There is still much for those of us who realise the importance of secondary education as a factor making for the well-being of a nation to do to convince our countrymen that an adequate supply of good secondary schools, though costly, is well worth paying for.

SIR WILLIAM ANSON formally opened the Sheffield Training College for Teachers on October 13th. The institution has been established by the Sheffield Education Committee, who acquired for the purpose the buildings of the Royal Grammar School. In the course of his address, Sir William Anson said that in a teacher we want something more than a well-informed and accomplished lecturer, or a good disciplinarian, or a skilful trainer of the cleverest boys and girls. The teacher must realise that his work is to deal with the average child, to raise the average standard of knowledge and intelligence, and to stimulate capacity and the desire to learn. This needs qualities of character, as well as special knowledge and training to teach, which is the essential business of the training college. In the past two years the Board of Education has remodelled the training of the intending teacher. It requires that before a boy or girl begins to teach two years should be spent either at a secondary school or at preparatory classes, and that during the two years of pupil-teachership half the time should be expended in study and half in teaching at an elementary school. If, said Sir William Anson, a pupil at a training college could devote all or most of his time to training, his time might be reduced to a year and the output of the college be doubled. And, if teaching was what it should be, a stimulation of thought, to reading, to work at home, school hours might be diminished,

thus affording greater facilities to teachers to engage in evening-school work and to prolong education to a later stage of the life of the boy or girl.

THE foundation-stone of the new Royal Grammar School, Jesmond, Newcastle-on-Tyne, was laid on September 29th. By the time it is completed the school will have cost over £60,000. Prof. Sadler, speaking after the opening ceremony, said there is a growing conviction that far more must be done in this country than hitherto to open up for boys and girls, however humbly born, some better kind of training for the duties of modern citizenship. In some points English secondary education at its best is without a rival in the world. It makes the boys, as no other school system in the world has ever done, love the school which breeds them; and it excels in producing a certain temperateness of judgment, a certain reserve of judgment, which is a supreme mark of the cultivated Englishman. But it has defects. Can we not add to the old English thoroughness of work and steadfastness of purpose something of the intellectual enthusiasm which marks the new world and the belief in intellectual ideals which has made Germany great? Prof. Sadler thinks that in some respects we have suffered from weakness in our educational work; we have been too sectional in our educational ideas. Has not the time come, he continued, when the education of a great district shall be thought out and planned as one thing from top to bottom? Do we not need greater precision of aim in higher secondary schools? Prof. Sadler hopes the Board of Education may see its way to select all over England a limited number of higher secondary schools to which it will devote special encouragement and special grants. We cannot, he concluded, prevail in the movement for higher secondary education unless we devote early and anxious attention to the position of the masters who form the staffs. Everything, in the long run, depends on that.

SPEAKING at a meeting of the Church Conference held on October 4th, at Weymouth, Prof. Sadler dealt with the teaching profession as a career. He said that it is most important to attract to education men and women of high attainments and character. Nowadays, more women than men are attracted to the profession. Fifty years ago the men doubled the women; now the women are half as many again as the men. In New England there are three or four times as many women as men. A liberal training, he continued, is not enough for the teacher; a special discipline is needed. There is no reason why character and conduct, on which so much stress has rightly been laid, should not be combined with the others. But adequate pay and promotion are needed to remove the dreariness of outlook which faces the assistant-masters, who should be able, if headships of schools are not attainable, to become heads of departments. The average income of an assistant-master is £150, and the maximum attainable is deplorably low. The Board of Education might well select out of secondary schools the best men for higher work. With women the state of things is better. The devotion of women in secondary schools is admirable. They have saved the situation. Even for them, though the start is better, the outlook is not cheerful. Scales of increment and pensions are needed for both men and women. There must be a strong national purpose to use every educational means to ensure these ends. Then—especially in towns—classes must be smaller. No class should exceed 35. No financial consideration should stand in the way. We must in no case fob off our inferior teachers on the smaller schools. In conclusion, he said, the individuality of the teacher must be respected. Teachers must be enabled to teach what they believe, and intellectual sincerity above all be maintained. This necessitates diversity, and the State and all concerned must to their utmost preserve this liberty and sincerity.

IN a recent address to a conference of provincial Directors of Education at Simla, Lord Curzon took the opportunity to review the progress made in educational matters during his Viceroyalty. He pointed out that in primary education there has been considerable advance; in the last Budget a permanent annual grant of 35 lakhs of rupees was made for this purpose; thousands of new primary schools are being opened, training schools for teachers are springing up in every direction, and the salaries of primary teachers have been raised. Similar work has been done in secondary and commercial education. In higher education the policy of the Government, though based on identical principles, has effected already an even more drastic change. Lord Curzon regards recent University legislation, and the reform that will probably spring from it, as a decree of emancipation. It is the setting free for the service of education, by placing them in authoritative control over education, the best intellects and agencies that can be enlisted in the task. Many of the valedictory messages and tributes he had received from native sources, he said, placed in the forefront the services he is generously credited with having rendered to the cause of Indian education. One of the most gratifying features in this renaissance in the history of Indian education is the stimulus that has been given to private liberality, showing that wealthy Indians are in cordial sympathy with the movement the authorities have striven to initiate.

A MEETING was held at the University of Birmingham on October 5th, with the object of forming a branch of the Classical Association of England and Wales for the Midlands. During the course of his address the Bishop of Birmingham, who presided, said the human race has continually to go back to the Greeks for the real play of intellect for its own sake, for freedom, versatility, and power of expression. If another renaissance supervenes it will have to be associated with the revival of Greek study, because Greek literature represents the highest standard of the power of thinking and the power of expression in a great variety of subjects. The healthiness of education as a whole is bound up, he continued, in the best men's studying the best standards in that subject. In an age like ours, when there is a very wide diffusion of education of a sort, there is nothing we need to cling to so tenaciously as that our best men shall be continually having their minds trained on the highest and the best standards. As to the need of reform in teaching, the Bishop said the absurdities of classical education are really imperilling its substantial good. Sir Oliver Lodge advised the Classical Association to place reform before maintenance, leaving the latter to the natural goodwill of the nation. He expressed a strong desire to see a Greek chair in the Birmingham University. A resolution in favour of the formation of a Midland branch of the association was carried, and the Bishop of Birmingham was elected first president of the branch.

THE "Special Reports on the Papers worked by Candidates at the King's Scholarship Examination, 1904," just published by the Board of Education, provides much interesting information as to the attainments of pupil teachers who have served an apprenticeship at the age of eighteen. The reports are not, as a rule, encouraging reading, and lead one to hope that recent endeavours to make the education of our future elementary school teachers the work of secondary schools will lead to better educated candidates presenting themselves for admission to training colleges. We have space for one quotation only. The history examiner reports: "The ignorance shown was pitiable. It would be incredible, if it were not certain, that at the end of pupil teachership students could perpetrate absurdities so gross as the following:—'The Milky Way was *one* of

the Roman Roads.' 'The battle of Waterloo was fought in a suburb of Liverpool' (a blurred recollection of the Waterloo Cup). 'Strafford wrote letters to the daily papers under the name of "Thorough."' 'The low Church did not believe in surpluses, and their services were conducted in a truly agonising manner.' 'The Cabinet is the place where the chief articles of State are kept'; and is 'a place of which the Archbishop has one key and the King another, where the State secrets are kept.' 'The Black Death is meant by the Black Hole of Calcutta'; or 'is another name for the Black Prince.' 'The Peasants' revolt was caused by the Fire of London.' 'Clive often suppresses the Indian Mutiny, or climbs the Heights of Abraham'; or he is 'an enterprising young Englishman who took part in the Black Hole of Calcutta movement.' These are but samples of hundreds of statements as absurd."

HAVING concluded an agreement with Prussia, the Board of Education has issued a revised circular (615) dealing with the subject of French and German assistants for English secondary schools. The plan proposed was described in our issue for October, 1904, and it will suffice here to say that the French and Prussian Governments have recently established a system under which a number of young masters in English secondary schools may be attached for a year to certain secondary schools in their respective countries. The authorities of the foreign Ministries of Public Instruction are most anxious to extend the scheme and to find similar opportunities in suitable English secondary schools for young graduates who will afterwards be employed in their State schools. These Governments have approached the Board of Education with a view to obtain their assistance. In the opinion of the Board, the proposal has much to recommend it, and, provided that proper care be exercised in the selection of the candidates and in the arrangements made for their work, it is thought that the presence of such teachers on the staff of a school might add materially to the effectiveness of the modern language teaching. Headmasters who are willing to co-operate and to employ such assistants are requested to communicate with the Director of Special Inquiries and Reports, Board of Education Library, St. Stephen's House, Cannon Row, Westminster, S.W.

WE have received a copy of a circular describing an institution likely to be of assistance to teachers spending their holidays in France. It is known as l'Université Hall, and is designed to meet the needs of foreign students staying in France. In addition to a residence in Paris, there is in connection with the "Hall" a country home at Cayeux, an office where information referring to studies can be obtained, and holiday courses at Christmas and during other vacations. The terms are moderate. Full information may be obtained from M. L. Jadot, or from Mme. Chalamet, at l'Université Hall, 95, boulevard Saint-Michel, Paris.

A SYLLABUS of lectures and discussions arranged by the Childhood Society and the British Child-Study Association has been published, and copies may be obtained from the secretaries of the societies, Mr. W. J. Durrie Mulford, Parkes Museum, Margaret Street, London, W., and Miss Kate Stevens, Carlisle House, Dartmouth Park Hill, London, N.W. Teachers interested in the physiology and psychology of child-life will find many subjects to interest them in the programme.

AN article has appeared in the October number of the *Nineteenth Century* on the study of history in public schools

by Mr. C. H. K. Marten, history master at Eton. He points out that England is, though improving, still behind France, Germany, and the United States of America in this respect. He pleads for more teaching of the subject, because it inculcates a true patriotism, tends to sympathy with foreigners, and to the avoidance of blunders in our dealing with them. It is also helpful in training intelligence, and helps the non-classical to appreciate literature and art. It specially lends itself to practice in the writing of essays, and even for younger boys it stimulates the imagination, and supplies them with necessary elementary information. He sketches a plan of study for candidates for Oxford and Cambridge who are neither classical nor scientific, and pleads for the study of history by those destined for business or the army.

It will be remembered that, in his presidential address to the British Association at Southport, Sir Norman Lockyer suggested the formation of a British Science League and outlined some of the objects such an organisation should keep in view. This suggestion has borne fruit in the inauguration of the British Science Guild at a meeting held at the Mansion House, under the presidency of the Lord Mayor, on October 30th. The chief object of the new association is to bring home to all classes the necessity of making the scientific spirit a national characteristic. Mr. R. B. Haldane is the first president of the Guild, and a large and influential list of vice-presidents has been published. Sir Norman Lockyer is the chairman of committees. All persons who are interested in science and the application of the scientific method are eligible for membership. It is hoped that the Guild will be successful in convincing the people of the necessity of applying the method of science to all branches of human endeavour, and thus to further the progress and increase the welfare of the Empire. Particulars of the Guild can be obtained from the honorary secretary, 16, Penywern Road, London, S.W.

LANTERN slides illustrating Tasmania and its resources can again be loaned from the Office of the Agent-General for Tasmania, 5, Victoria Street, Westminster, London, S.W., during the coming winter months. The slides are made up in complete sets of about fifty each, and with each set a pamphlet will be sent to assist the lecturer in describing the country to his audience. The only cost to the borrower will be about one shilling, the carriage on returning the slides. As some difficulty has been experienced in the past in allotting dates convenient to the applicants, there should be given in every application as many dates as possible.

A CONFERENCE of teachers in secondary schools for the discussion of the teaching of English literature was held on October 14th, at the Polytechnic, Regent Street, London. Mr. A. C. Guthkelch, of King's College, who read a paper, said that practically every boy likes literature, although he may not like the highest kind. It is therefore the teacher's business to cultivate and to refine this instinctive love of letters. Our science teaching and our mathematical work are, he said, admirably adapted to secure accuracy of thought and fulness of technical information so necessary to the modern man; it is the place of literature to train and to satisfy the other side of our nature which is ours because we are not machines, but human beings. For Englishmen, the best instrument for this purpose is English literature. The study of classics in the past has not been such as to satisfy emotional needs, and it is rather late in the day, when Latin and Greek are disappearing so rapidly from middle-class schools, to attempt to make those reforms

which would make the ancient languages take the place that we are now according to English. To teach literature at all we need competent teachers, and of these there is no lack. Mr. Guthkelch outlined a course of study, and concluded by remarking that, if we can get rid of mechanical methods, and substitute for them enthusiastic, living teaching in literature lessons, something may be done to kindle that divine spark which is to be found in the breast of every human being—even in a fourth-form boy.

MR. G. H. CLARKE, M.A., second master of Hymer's College, Hull, has been appointed headmaster of the new Acton County School, Middlesex.

SCOTTISH.

THE annual general meeting of the Educational Institute of Scotland was held in the Royal High School, Edinburgh. Mr. James Young, Rector, High School, Biggar, presided over a large attendance of delegates and the general public. The respective reports of the secretary and treasurer were the most satisfactory ever submitted. Over 2,000 new members had been admitted, and the balance in favour of the Institute exceeded £7,000. The president, in his retiring address, dealt in a trenchant and outspoken fashion with the failure to pass the Education Bill. The proceedings as a whole were eminently harmonious, if not also a trifle dull. The only question of importance that emerged was the curriculum of the rural school. After a good deal of discussion it was unanimously agreed that an endeavour should be made to have in every parish some school which provided a certain measure of secondary education.

CIRCULARS have been issued from the Scotch Education Department stating that they are prepared to consider applications for the examination in science and drawing of pupils in secondary schools or the supplementary courses of elementary schools. Schools desiring to present candidates at the next examination in these subjects for the purposes of the Leaving Certificate or the Intermediate Certificate, or for obtaining marks at the King's Scholarship examination, 1906, should make application to the Department for the special forms that have to be filled up in connection therewith. These forms, duly completed, should be returned to the Department not later than March 31st, 1906.

A THOROUGHLY representative conference on Scottish Education was recently held in the Merchant Company Hall, Edinburgh, and as a practical outcome of it an association has been formed, to be called the Scottish Education Reform Association, in order to promote the following objects: (i) the co-ordination of local education in each district under a single authority in an area adequate for both grades of education; and (ii) the creation of a General Council of Education comprising representatives of local education authorities, and also of institutions connected with higher education, especially Universities, to advise the Scottish Education Department in all matters connected with its executive action. Mr. R. B. Haldane was elected president and Colonel Denny and Mr. Norman Lamont honorary secretaries. The basis of the association is sufficiently broad to admit all parties save those unalterably wedded to the *status quo*.

THE death of Miss Flora Stevenson, LL.D., Chairman of the Edinburgh School Board, removes from the world of education one of its most gifted and picturesque personalities. Only a few months ago, on being made the recipient of the freedom of the City of Edinburgh, a tribute was paid in these columns to her conspicuous service to education, and to her

whole-hearted interest in every good work. The higher education of women found in her one of its earliest champions, and it was largely owing to her persistent and determined advocacy that the doors of the universities were thrown open to women.

DUNFERMLINE COLLEGE of Hygiene and Physical Culture, which has been established under the Carnegie Dunfermline Trust, was opened by the Marquis of Linlithgow, Secretary for Scotland, who said that physical training meant the development of general health to the advantage of the whole body, and indirectly to the mind. In old days the struggle for existence was purely a physical one. Life nowadays is much more artificial, and it is necessary to find means to counteract the evils inseparable from artificial conditions. This can best be done by a thorough system of physical education for the young people, and by a careful study of the laws of health in our schools. The Carnegie Trust is doing a valuable national work in this connection by the foundation of this College. It is doing a work which no School Board could do, as public opinion has not sufficiently ripened to allow the Education Department or any local authority to apply any large portion of its funds for purposes of this kind. The work in connection with the College is twofold. Following the method established for the training of teachers, there is first a great practising school represented by all the children of school age in the town. It will be the duty of the medical adviser or his assistants to see to the physical condition of each child as he or she enters school, and to arrange their physical training in accordance therewith. At the same time definite instruction in the laws of health will be given to the older pupils. The second aim of the institution is to train up a body of students in the most approved methods of physical culture and hygienic conditions, so that they may serve not only Dunfermline but the country at large as thoroughly qualified teachers.

AT a meeting of Glasgow University Court it was agreed to forward to the Privy Council representations in favour of the institution of degrees in veterinary medicine and surgery, and the inclusion of geography among the subjects qualifying in graduation in arts. A communication was read from St. Andrews University Court recommending that joint action should be taken by the Scottish universities to raise the art fees, and with a view to this being done that a conference should be held of representatives of the various universities to consider the matter. While not committing itself to any expression of opinion on the proposal, the Court agreed to send delegates to the proposed conference.

IRISH.

TWO important benefactions to Irish education are announced from the North. Mr. Basil McCrea, of Belfast, has generously offered £7,000 to endow a chair of experimental physics in Magee College, Londonderry, and to found in connection with it two scholarships on the condition that the cost of a proper laboratory is subscribed before November 1st. It is stated that there is no doubt as to the condition being fulfilled.

THE other gift is far more important both in amount and in scope. Sir Donald Currie, having learnt that £30,000 has already been subscribed towards improving Queen's College, Belfast, and that £40,000 or £50,000 is still necessary to provide for what is aimed at, has, as an old Belfast man, made three alternative offers to support the scheme. The scheme aims at additional professors or lecturers, an improved library, the completion of a chemical laboratory, and an enlargement of

the museum and students' chambers. Sir Donald Currie has offered (1) to give a contribution proportionate to that which others have given; (2) to give £10,000 if others will contribute to an equal extent; or (3) in the hope that the whole scheme can be successfully carried out, to give £20,000, if an equal amount can be obtained from others. The authorities are anxious to avail themselves of the third alternative, and, as next Christmas is fixed as a time limit, they wish promises of help to be made at once, and express their willingness to allow the payment of donations to be extended over five years.

MEANWHILE the annual report of the president, the Rev. Dr. Hamilton, for the past year is distinctly favourable. The total entry of first-year students last session was the highest for thirteen years, and the total attendance the highest for twelve years, the chief increase being in the number of medical students, while advances were also reported in the faculty of Arts, in Law, and in Engineering. The regular students of both sexes totalled 395, while inclusive of those attending special courses the number rose to 501. The scholarship and prize fund amounts to £2,400 per annum.

It is announced from Trinity College that next year experimental science will form one of the subjects for the School and Junior Exhibition examination, and that to obtain credit for it candidates must produce evidence of having had at least one year's practical work in a laboratory. The scale of marks from next year on will be: classics, 360; mathematics, 300; English literature, history and geography, 140; English composition, 100; French or German, 100; science, 100. The examination for sizarships will next year be postponed from June to December.

VERY serious discontent has been expressed this autumn with the awards of exhibitions and prizes on the result of the recent Intermediate examinations. Exception is taken particularly to the awards to girls and to the unfair results of the group system. The Irish Association of Women Graduates and Candidate Graduates has deprecated the want of encouragement given to girl students taking the classical and mathematical courses. Only one prize was awarded for classics and no exhibitions, in mathematics two exhibitions were awarded in the middle grade and three in the junior. In the modern literary courses there were ninety-eight exhibitions and prizes, and in the science courses fifty-eight. And yet, as the Association pertinently remarks, it is obvious that the main subjects in the two former courses are educationally more valuable and much more difficult than in the two latter, while they are also essential for women who are proceeding to the Universities. The rules lay it down that the awards for girls and boys are to be separate, but it is clear that the Commissioners observe practically the same standard; not exactly, however, for in the modern literary group the standard for girls is actually higher than for boys.

A WRITER in a northern paper compares the group system by which a student is bound to declare beforehand in which course he is competing, to a gamble, since many students are by the subjects for which they enter eligible for more than one course, and it is often by a mere stroke of luck that the right course is chosen—that is to say, the course in which he will obtain the best result. Twenty-three instances are given, with chapter and verse, of boys who chose the wrong course, and who, if they had chosen another course, could have obtained a higher prize or exhibition. The case of Thomas Roche is particularly striking. He actually obtained first place in the classical group which he had chosen, but was only given a £25 exhibition. By his subjects he was eligible for all the other

three groups, and, had he entered in any one of them, he would have obtained a £30 exhibition! The obvious remedy is that a candidate should not be compelled to declare his group beforehand, but should be placed by the Board in that group in which he does best. It is as well that this point should be made perfectly plain now, as by a new rule (43) for 1906 similar injustices would be obscured, and extremely hard, if not impossible to detect. The Schoolmasters' Association has made a special question of this matter, and has also protested against the small number of awards in the middle grade.

ANOTHER weakness of the present system which has given rise to much criticism has been dealt with by the Teachers' Guild. Pass candidates are bound to pass in one of the four courses, and it is quite possible, since many students have done so, to pass in six good subjects, and yet not to pass in any of these four courses. The Teachers' Guild has therefore suggested that these four courses should be abolished for pass candidates, and that instead the requisite subjects for passing should be (a) English literature and composition; (b) Latin or French, or German; (c) one mathematical subject; (d) experimental science or a second language, or a second mathematical subject; and (e) two other subjects. This, however, should be subject to the conditions laid down in Rule 10 that all students, excepting those taking both Latin and Greek, must work through a two years' preliminary course of experimental science.

WELSH.

IN a speech made to the Denbighshire County Association of Elementary Teachers, the Bishop of St. Asaph stated that in Denbighshire there were fifteen headmasters whose incomes were £95 or under, and nine whose incomes were under £90, while there were twenty-one headmistresses whose incomes were £80 or under. The head teachers of non-provided schools in the county received on an average £116 a year, whilst those in the provided schools received £127. The Bishop considered the last persons to suffer in the educational contest ought to be the teachers and the children. But teachers were being driven out of the schools of Wales, and good teachers were prevented from coming into Wales.

At the same meeting, Mr. George Sharples, ex-President of the National Union of Teachers, declared that it was now better to be an assistant-master in a Manchester school than a headmaster in a Denbighshire school, and yet the assistant-masters of Manchester are not as well paid, on the average, as the rate-collectors, the clerks of the education authorities, or even the policemen of the city.

IN the Cardiganshire Education Committee, the following are stated to be the salaries under the Committee. At Aberayron National School the salary of the head teacher has been reduced from an equivalent of £115 to £90, with a register of 120 pupils. Two applicants who were offered the post declined it, and the others were not eligible. On the other hand, at another school under the Committee it was stated the salary was £170 a year with 115 on the register, and in a second school, with 70 on the register, the salary was £102. It was stated that the mastership of a certain Council school had been reduced from £80 to £55. The vacant headmastership of Trefilan National School had been advertised at £65, and out of nine applications, eight were from uncertificated teachers. It was stated that the effect of these lowered salaries was that certificated teachers are removing from Cardiganshire to Carmarthenshire, where the education committees were adopting a more liberal policy.

THE first emergency school in the county of Montgomeryshire has been opened in a Welsh Calvinistic Methodist Chapel between Carno and Pontdolgoch. Sixty-one children were enrolled, more than fifty being taken from the Llanwnog church school.

IN Merionethshire, the Education Committee has turned its attention to school attendance. It has decided to award silver medals, with the arms of the county stamped upon them, to the 472 children in the county who have made full attendances during the past year. Under the new county scheme, children who make continuous attendance for four years will receive rewards in the form of silver watches, or similar gifts, while those who make full attendance for seven years will receive still more valuable rewards. Shields are to be awarded yearly to the three schools with the best record.

THE following resolution has been carried in the Anglesey Education Committee: "That this Committee is of opinion that the discarding of slates from the schools would be detrimental to education, and is further of opinion that the use of the slate and slate pencils is less likely to spread infection than the use of the lead pencil and paper." The doctors supported the resolution, and it was passed with one dissentient.

MONTGOMERYSHIRE Education Committee Council is attracting the special attention of Wales at present. The liberals, who are in a majority, have decided that they will not be responsible any longer for the carrying on of elementary education in the county. The salaries of teachers in the voluntary schools for the present quarter come to £2,735, and a motion was carried by 31 votes to 9 refusing to confirm the recommendation of the Executive Committee that this amount should be paid. The liberal members then withdrew from the meeting, and since then the minority of conservatives, together with one liberal who disapproved of the action of the majority, have been left to proceed with the business of the Committee. The minority has held meetings, and has called the attention of the Board of Education to the state of affairs, and it now remains to be seen what action will be taken by the Board of Education. Meanwhile, the representatives of the teachers have withdrawn from the Education Committee.

RECENT SCHOOL BOOKS AND APPARATUS.

Classics.

The Works of Lucian of Samosata, complete with exceptions specified in the preface. Translated by H. W. Fowler and F. G. Fowler. In four volumes. xxxviii + 248; iv. + 275; iv. + 280; iv. + 247 pp. (Clarendon Press.) 14s. net.—This is a clever work, done with much literary tact and humour. Lucian is one of the most delightful of humourists, but it is quite easy to make him dull in a translation. This translation sparkles, and even pieces like the "Purist Purized," which turns wholly on Greek phraseology, have been successfully attempted, and rendered by English equivalents with great ingenuity. Indeed, when we see what the translators have succeeded in rendering, we cannot understand why they have left anything out. A dozen dialogues are omitted, with *Lucius, De Dea Syria*, and several other pieces. For expurgation there is something to be said, especially as this work

seems to be intended for the general reader; but that does not apply to all the omitted pieces. We do not think that a translator should be ready to omit a piece because some one has supposed it to be spurious. However, the authors are justified in settling their own limits. In this the general reader will have a book worth having; but if there are any serious students who want to estimate Lucian as a whole without knowing Greek, they must go elsewhere. For those who do not know Greek there is a long list of notes on the allusions, grouped alphabetically under names. There is also an introduction, on the whole, the least satisfactory part of the book. We congratulate the translators heartily on their work, and wish that it may be rewarded by a wide appreciation.

Roman Education. By Dr. A. S. Wilkins. viii. + 100 pp. (Cambridge University Press.) 2s.—Prof. Wilkins was an excellent scholar, who has left us a good edition of Cicero's "De Oratore"; but his life was taken up with the humdrum of elementary teaching, and his powers never had full scope. He retired too late for his leisure to have borne fruit; and this admirable little sketch adds to our regret at his loss. The work is arranged in chronological periods; a necessary thing, because Roman education changed greatly under foreign influence. At first it was almost wholly a family affair: children in their homes gradually and naturally imbibed "the customs of their ancestors," in which consisted all their training, and to keep them was their great pride. There was little of book-learning in this training; it was practical, the conduct of life and administration on a moderate scale, and its aim was to enable the boy to manage his family and his estate, and the girl to be a good wife and mother. As we all know, a fine type of character was developed by this means, marked by courage, endurance, public spirit, and justice, if also by narrowness. The traces of school education under the Republic are few and scanty. But the introduction of Greek culture changed all this. Literature began to be studied, and the Romans were the first nation to found their culture upon the study of a foreign language. Under the Empire we find a wider conception of education, and it was extended to the humbler classes. Rhetoric and declamation were now an important part of the boy's training. The aim was, however, still practical; and in principle education in Rome differed entirely from that of the Greeks, who based theirs upon music and poetry. For the beauties and amenities Rome cared little or nothing, often, indeed, despised them as immoral. Roman education has its historical interest, for it forms the foundation of the education of mediæval and modern Europe. We can recommend this little book cordially to our readers.

A Primer of Classical and English Philology. By the Rev. W. W. Skeat. viii. + 102 pp. (Clarendon Press.) 2s.—Here is a book which has been very much wanted, since Peile's primer has become out of date. It is not so interesting or suggestive a book as Peile's; the author is a little discursive, and the book is not altogether clear in plan. The scale of the book is too small for anything but a statement of general principles and a summary of facts; but the general principles, the forms of language, the question of the invariability of phonetic law, and other such, are not clearly stated, whilst the facts are grouped in a way which seems arbitrary, most of them under the head of certain types of English strong verbs. As a series of philological notes, however, the work is likely to be useful, and as we have said, it has at present no rival. It will be most useful as a collection of cognates under the head of certain English roots. Prof. Skeat is, of course, well up to date in his knowledge, and his English illustrations are especially full.

English.

Interludes in Verse and Prose. By the Right Hon. Sir George Otto Trevelyan, Bart. vi. + 304 pp. (Bell.) 6s. net.—What Cambridge man—what man, indeed, with a spice of letters in him—does not know “Horace at Athens,” with its many parodies of the Roman, and those allusions so dear to the undergraduate—the Paley card, the proctors, town and gown? and the famous lines—

“We’ve a hall steward, who becomes the place,
And draws his salary with wondrous grace;
But no one can perceive, as I’m a sinner,
A very marked improvement in the dinner.
We still consume, with mingled pain and grief,
Veal that is tottering on the verge of beef,
Veal void of stuffing, widowed of its ham,
Or the roast shoulder of an ancient ram.”

History repeats itself; how often have we heard this very complaint! Or those four lines, no less famous, which cost the unlucky author substantial loss. The “Cambridge Dionysius” and the “Modern Ecclesiastusæ” are less easy to understand than—

“Can this be Balbus, household word to all,
Whose earliest exploit was to build a wall?”

But their high spirits and merry gibes can still amuse us, unless we have quite lost touch with our youth. “Anglo-Indian Lyrics” and the “Dawk Bungalow” may serve to remind us that there were humourists before Rudyard Kipling, perhaps even more so. “Letters from Patna” may serve to draw some to read that still remembered book, the “Competition Wallah,” a creature who, in fact, owed his being to Sir George Trevelyan’s own father. Sir George tells us also that it was due to his father that the army has adopted the principle of promotion by merit. We hope it has, and wish his father were alive to introduce a similar reform into some other professions we could name. This is a very entertaining book, and our readers will not repent if they purchase this instead of their next six-shilling novel.

Paradise Lost. Book I. xi. + 34 pp. 6d. Book II. xii. + 41 pp. 6d. xii. + 33 pp. 6d. Scott’s (1) *Marmion*. xxiv. + 229 pp. 1s. 6d. (2) *The Lady of the Lake*. xxiv. + 175 pp. 1s. 6d. (3) *The Lay of the Last Minstrel*. xxii. + 121 pp. 1s. (4) *The Talisman* (abridged). xxvii. + 204 pp. 1s. 4d. *Tales of King Arthur and the Round Table*. vi. + 152 pp. 1s. Macaulay’s *Lays of Ancient Rome*. xiv + 98 pp. 1s. —(Longmans.) We have had occasion previously to speak well of Messrs. Longman’s new series of class books of English literature, some volumes of which have already come our way. In the case of each of the nine volumes now under notice the same high standard is maintained. A good text prepared from the best authorities, large clear type and an unusually strong binding, no great incubus of annotations and a series of most interesting and ingenious examination questions: Such are some of the outstanding merits of this series. In the case of all the Scott volumes an Introduction and Memoir by Mr. Andrew Lang adds an additional charm to serviceable books. Mr. Lang, too, is responsible for the selection of the Arthurian stories, a volume which is handsomely illustrated by Mr. H. J. Ford, and ought to be specially acceptable on every account to junior and middle forms. We can also commend Mr. Salmon’s work in the case of the Milton Booklets. Altogether the series promises well, and if the present high literary standard is maintained throughout it ought to find an abiding place in schools, even in these rapid days when educational series multiply so fast that it is difficult to keep account of them. We congratulate Messrs. Longmans on a really worthy venture.

The Works of William Shakespeare. Vol. I. viii. + 280 pp. (Methuen.) 6d.—This is the first instalment of an edition of Shakespeare to be issued at a price so low as to put it within the reach of everybody. The printing and get-up of the volume are excellent. Mr. Sidney Lee is the editor, and supplies a brief introduction, and the whole of the great dramatist’s works are to cover ten sixpenny volumes. All who are in want of a well-printed text unencumbered by notes or editorial matter may be advised to try this one.

Browning’s A Blot in the Scutcheon, and other Dramas. By Prof. Arlo Bates. xxxviii. + 305 pp. (Heath.) 2s. 6d. net.—This elegant edition of four of Browning’s dramatic works merits enthusiastic attention, if only for the dainty piece of criticism which Prof. Arlo Bates has supplied in his introduction. His biography of Browning is brief to a fault; but when he turns to purely critical matters his fine taste and clear insight are at once displayed. His remark, “Certain it is that no one with a quick ear can fail to recognise how fully Robert Browning had that power of evoking from words a music and an enchantment which belongs only to the true poet,” is a case in point, because it is quite true; and yet it must be conceded that it takes an ear more than commonly sensitive to rhythmic beauty to extract this music from Browning’s verse. To the Philistine he still remains a hopeless perplexity, but to many also who have made long advances from that point of view, Browning as a writer of musical verse is a sore trial. The notes to these dramas are not numerous, though they are excellent.

Scott’s The Talisman. By Geo. L. Turnbull. xxxiii. + 502 pp. (Dent.) 1s. 6d. net.—Editions of this novel for educational purposes multiply as the sands upon the seashore; but this one has to recommend it those features of artistic elegance which distinguish all the publications issued from Aldine House. The editor’s introduction is a brief but careful sketch of Scott’s career and an analysis of the novel, and may be commended on account mainly of its condensation and comprehensiveness. Scott’s notes are found at the end, supplemented by several pages of the editor’s own, in the midst of which the illustrations are found which tend to make this edition noteworthy. The glossary is worthy of attention.

In Memory of Those that have Gone Before. 156 pp. (Sonnenschein.) 1s. 6d. net.—This little volume applies the idea of the customary birthday book to a collection of anniversaries of the death of friends and acquaintances. The thought which pervades all the selections (and these are uniformly well done) is that death is a transition to a fuller and a larger life; and it may be said at once that all sectarian and sentimental matters and feelings have been carefully excised from the literary matter. To those who know how to bear the sorrow of bereavement well, a book of this kind may be of some service; though these are few, and books that perpetually afford reminders of dead kinsfolk and acquaintance to morbid people are not to be unreservedly commended. In colleges and schools, however, we can imagine such a little book being of great use. In any case it is elegant, and may be described as a happy thought well carried out.

Mahomet and his Successors. By Washington Irving. 481 pp. (Dean.) 2s. 6d. net.—This is an anonymously edited revised edition of Irving’s celebrated work, supplied with his own preface and not a word from anybody else, absolutely without notes, and therefore only calling for remark by reason of its usefulness as a reading-book for middle forms. In this capacity this edition ought to see much service.

History.

Short Lives of Great Men. By W. F. Burnside and A. S. Owen. viii. + 296 pp. (Edward Arnold.) 3s. 6d.—We have often wondered what the eleventh chapter of the Epistle to the Hebrews would have contained if the author had been an Englishman writing to Englishmen. How many illustrations of "faith" could we find in the history of our own country! This book would help us to make a list of such. Those who designed the rededos lately erected in Cheltenham College Chapel to the memory of those Cheltonians who fell in the South African War were well inspired. They have placed on it figures of forty-four men famous in the history of our country, ranging from S. Alban to Charles Gordon, and two assistant-masters of the college have added to the usefulness and pleasure provided by the sculpture by giving us this book. It contains photographs of eight of the statues, and short biographies of all those thus celebrated. Their work has a truly catholic tone, and they have set forth with historical sympathy the work of men so different as Dunstan and Milton, More and Tyndale, George Herbert and John Bunyan, Wesley and Keble, to mention only a few of the names here commemorated. And we cannot refrain from quoting part of the paragraph with which they end their notice of Bunyan. "Over the wicket-gate through which the pilgrim started on his road to Emmanuel's Land were the words, 'Knock and it shall be opened to you.' But now a new fence seems to be erected, barring the entrance to the book itself, set up by the writers of short tales and magazine stories with the inscription, 'No road here. . . .' A generation is growing up that does not remember . . . that the Palace Beautiful has been built on the Hill of Difficulty by the Lord of the hill for the relief and security of pilgrims. . . ."

A First History of England. Part VI. By C. L. Thomson. xii. + 359 pp. (Horace Marshall.) 2s. 6d.—Miss Thomson calls this, the sixth part of her work, the story of "constitutional monarchy," but it might equally well, if not better, be called "our second hundred years' war with France," for, while she begins with 1689, she ends not with the passing of the Reform Bill, as is usually the case, but with the year 1820, when the nation was still suffering from the after effects of the great war. And, while domestic affairs are by no means neglected, more space is given to foreign affairs, which, with the exception of the tangles of 1715-39, are treated as fully as is possible in books of this kind. Miss Thomson thinks the eighteenth century an unsuitable subject for younger children, for with them "it can only be treated episodically and in a very superficial fashion." She therefore intends this book for other than junior pupils, and is thus free to include "those references to ministerial changes and foreign policy which make this period so perplexing." The book is illustrated in the same manner as the previous parts, and there is an index. The story is told correctly and pleasantly, and to those who *must* teach this period we can heartily commend this as a suitable text-book.

A Primary History of England. By Mrs. Cyril Ransome. 165 pp. (Rivington.) 1s.—To cover the whole of English history in 165 pages, it is of course necessary to omit much. This book may be therefore described as a mention of the chief events, with good illustrations, and but very few minor errors. It is intended as an introduction to the "Elementary History" by the author's husband, and is even shorter than her "first history."

The "A. L." History Pictures. Edited by A. Gardiner. (Arnold.)—We have received six more specimens of this series. They measure 39 in. by 36 in., and are well executed in colours.

Care has been taken to make the dress and other details correct, and they are certainly attractive and useful. Unfortunately, perhaps, the half-dozen all remind us of the phrase, "battle, murder, and sudden death," and we cannot avoid a suspicion that some of them at least may be too much for the nerves of some of our more susceptible pupils. The price varies according to mounting. Any one sheet, on cloth, varnished and mounted on rollers, costs 4s. net. Each picture is accompanied by an explanation from the pen of some famous author.

Flame Bearers of Welsh History. By Owen Rhoscomyl. xii. + 258 pp. (The Welsh Educational Publishing Co., Merthyr Tydfil.) 1s. 6d. net. *The Story of England and Wales.* By J. Finnemore. xii. + 171 pp. (The Welsh Educational Publishing Co., Merthyr Tydfil.) 1s. 3d. net.—It is some time now since we began to learn that England was *not* the "predominant partner" in the government of the United Kingdom, but that what Englishmen used contemptuously to call "Celtic fringes" were the real rulers of the British Empire. We know that many scholars have been at work interpreting the long-neglected evidence which now begins to reveal the history of those peoples who lived here before the arrival of English and Saxons, but their work was so technical, the heroes of their story so shadowy, the story they had to tell so like what Milton called "battles of kites and crows," that few of us understood what was happening. But now, with the publication of these books, we are forced to realise that a revolution is taking place. It seems that "Geoffrey of Monmouth" (we beg his pardon, Gruffydd ab Arthur) is all true, only arranged badly, so that the Sassenach has misunderstood him, that King Arthur (of Malory and Tennyson) really lived at Carlisle, that Edinburgh is named after a brother of Arthur, not after Edwin of Northumbria, and that after long years of fighting it was not the English who conquered "Wales" but a Welsh prince (Harry ap Edmund ap Owen Tudor) who conquered England at Anbian Hill (near Market Bosworth) in 1485. "The stubborn Cymry had come into England to win the *Crown of Britain* back for one of the old blood of its founder. They did it in very deed. . . . Did the bones of all the slain generations of the Cymry who had struggled for this day stir in their red graves? Surely their spirits knew when the work was done at last. Surely a sound like the moving of a mighty wind must have swept over Cymru, for the ghosts of all the heroes, slain in the battles of the thousand years of struggle, could leave their graves at last and go to God—the long work done, the victory won, the 'Nunc Dimittis' chanted o'er the mountains as they passed." After that, there is nothing in history except the "Act of Union between England and Wales," 1536; so, at least, we gather from the "outline of the story" told in the "Flame Bearers" of which the copy before us is a school edition. There is a "public edition" (price 5s.), which contains what we really miss in this, an index. Our old friend Mr. Finnemore's little book is an elementary reader inspired with the same idea. Welsh is as important as English history, at least down to 1485, and takes as much, if not more, room. Both books are well written and well illustrated. They should be welcomed in Welsh schools, and may possibly help to redress the balance with English readers.

Mediaeval History. By M. A. Howard. xii. + 255 pp. (Horace Marshall.) 2s. 6d.—This is the second part of a "primer of general history," and covers the period from 476 till the end of the fifteenth century. In so small a space, it is of course impossible to tell everything, or to treat any one subject fully. Miss Howard has told the story of Western Europe and

its activities in a series of topical chapters, and thus departs somewhat from chronological order. The consequence is a lack of compactness in the treatment and the necessity of cross references, and of study of more than one chapter for the knowledge of any one period. The teacher will need to supplement the book with fuller explanation if the pupils are to understand the motives of the actors. But in the dearth of books on European history available we welcome this brightly-written and well-informed little book. It will help our teachers to introduce English boys and girls to a subject commonly taught in Germany and France, if not in America, but as commonly neglected hitherto in this country.

Geography.

The Junior Geography. By Dr. A. J. Herbertson. 288 pp., 166 maps and diagrams. (Clarendon Press.) 2s. — This excellent book of Dr. Herbertson's is vol. ii. of the "Oxford Geographies," the first volume of which, dealing with physical geography, is, as we learn from the preface, in course of preparation. We shall accordingly look forward with zest to the appearance of the preliminary work, for this—the second—promises much. It is good everywhere, but best of all where the author is teaching rather than writing; it is least satisfactory where he is engaged upon the long descriptions which, in some places, rather tend to overload the book. Of his former style there is a good example on pp. 95, *seq.* He is treating of the physical map of Europe. "Look," he says, "at the relief map, fig. 54, which shows &c., &c. . . . Observe that the deep seas form three basins. . . . Notice that the inner seas of Europe fall into two groups . . . ;" and so on. Now, this is good work. It compels the reader's attention to his map; it makes him think; it helps him on from cause to effect. *O si sic omnia!* The sketch maps are a distinct feature of the book. For the most part, they are really very good, most interesting and most instructive. But surely Dr. Herbertson might have left to the "good atlas and wall maps," which he specially recommends in his preface as supplementary to his book, the portraiture of the larger continental land masses. To attempt to reproduce the physical features of all Europe in a space 5×4 inches, all Asia in another $3\frac{1}{2} \times 3\frac{1}{2}$ inches, and all Africa in a third $3\frac{1}{2} \times 4$ inches, is assuredly superfluous and certainly ineffective. In colour tints, as on good lantern slides, it is quite possible, but in black and white it merely tends to confusion and wastes space. The little maps, however, make all amends. Those not produced specially for the book are drawn largely from Mackinder's "Regions of the World" series. They are essentially illustrative and clever. Dr. Herbertson has not stinted them; he has preferred to err on the other side, as, for instance, in reproducing Prof. Partsch's "Brandy-making Districts in Europe," which, with all due deference, we do think a little out of place in a book of this nature, even when coupled with "the Hop Gardens" of the same area. On the whole, the book strikes us as being rather an excellent companion for the teacher than a text-book for the pupil. Given that the former can and does use his blackboard and his wall atlas in the geography lesson, he has here an invaluable help. For the junior pupil there is a little too much writing "overhead," and not enough exercises for his wits—for the "Oxford Local Junior," that is to say: for the ordinary junior the book is much too far advanced both in matter and diction. For him the ideal geography has yet to be written.

Round the Empire. By Dr. G. R. Parkin. With a preface by the Earl of Rosebery. New and revised edition. viii. + 272 pp. (Cassell.) 1s. 6d.—A volume which has reached

its 143rd thousand, which, moreover, merits a preface by Lord Rosebery, needs no commendation in these columns. We have no doubt that this brightly-written and well-illustrated reading-book will long continue to be a favourite in our schools.

Science and Technology.

Machine Construction and Drawing. By Frank Castle. viii. + 275 pp. (Macmillan.) 4s. 6d.—The early portion of this book is taken up with illustrated descriptions of drawing instruments, their use, testing for accuracy and adjustments; the principles of projection, usual methods of producing working drawings, hand sketching and dimensioning. The remainder of the book comprises an excellently arranged course in machine construction and drawing. The student is first introduced to the commoner details used by engineers, such as riveted joints, screws, shafting, bearings, pulleys, &c., seven chapters being devoted to these. Six chapters follow on engine details, and the manufacture and properties of materials are explained in the final chapter. Useful logarithmic and other tables are included. The page dimensions of the book being about 9 in. by 7 in., the sketches and drawings given are of large size, and are clearly dimensioned. The author has avoided the crowding together of too many illustrations on one page—a mistake frequently found in books of this class. The printing of the illustrations is excellent. In each example clear explanations are given of the materials employed and the reasons for their use, the putting together of the various parts, and the kind of motion each part has in the case of machines. The simpler calculations required to proportion correctly the various parts are clearly and concisely given. At the end of every chapter will be found a number of questions involving a knowledge of construction and hand sketching such as a student who has carefully digested the chapter will find pleasure in working out at home. The arrangement of the book manifestly indicates that the author has kept in view the cultivation of a sound knowledge of the subject. Many of the examples are taken from the Board of Education examination papers, and the book should prove useful to teachers who are preparing students for these examinations, and also for the Intermediate Engineering examination of the University of London.

An Introductory Course in Practical Physics. By James Moffat. 195 pp. (Oliver and Boyd.)—This book embodies the work-sheets drawn up during the last seven years for use in the Greenock Higher Grade School. The subject-matter is divided into twelve chapters, in which are described experiments on mensuration and weighing, densities of solids and liquids, experiments on pressure, heat, levers, centre of gravity, friction, parallelogram of forces, the inclined plane, pulleys, velocity and acceleration, the bending of beams, and the stretching of wires. The experiments are simple, and are clearly described; and, although the majority of them are to be found in volumes of a similar character which have been published previously, yet in several instances we find experiments of a novel and useful character. On p. 49 a very misleading statement of the Principle of Archimedes is given. On p. 86 the student is directed to find the boiling-point of alcohol or turpentine by heating the liquid in a flask which is supported directly on iron gauze over a Bunsen burner; this is most dangerous procedure. Instruction in the use of the balance is almost absent, and there is no mention of the *sensibility of a balance* and of *weighing by oscillations*, which might well be included in a first year's course. Apart from these faults, the volume can be recommended as supplying a serviceable course of instruction in experimental physics.

An Elementary Text-book of Inorganic Chemistry. By R. Lloyd Whiteley. viii. + 245 pp. (Methuen.) 2s. 6d.—The author of this book appears to believe still in the didactic method of teaching science. His object seems to be to impart information rather than to assist the pupil to develop habits of careful observation and exact reasoning. The book is correct and nicely arranged, and yet an examination of it suggests the better books of twenty years ago. It is quite true that experiments are described, but the style of the work will suggest to an ordinary student that science may be learnt satisfactorily by reading, and the possibility of such a conclusion on the part of the reader should have been avoided. Unless the instruction in science in our schools leads to the formation by the pupils of scientific habits of thought, it is of doubtful educational value, and it is to be feared that Mr. Whiteley's book will not provide the right point of view in the early study of chemistry. Any teacher who considers the chief object of the chemistry lesson to be the presentation of important facts of chemical science in an attractive manner may adopt this book with confidence.

Science in the School: a Course of Experimental Science and Nature-study, with Teaching Hints. By W. Gibson. 87 pp. (Edinburgh: Pillans & Wilson.) 1s. 6d. net.—As Mr. Gibson says, the first half of this little book follows in the main the tradition common to laboratories. The usual work, on preliminary measurements and on the physics and chemistry of air and water, is gone over in a manner which is now, we hope, familiar to teachers of science in schools. In the remaining part of the book, which deals with the study of living things, the author has given too much prominence to classification, and the number of technical terms introduced is likely to weaken the pupil's interest. As an attempt to co-ordinate the teaching of physics and chemistry in schools with the nature-study lessons the book deserves the attention of teachers.

Catalogue of Scientific Instruments. Vol. I. Physics. Third edition. (Philip Harris.)—This excellent catalogue is already well known to science-masters and mistresses, and the new edition is likely still further to inspire their confidence. The excellence of the illustrations, the clearness of the printing, and the simplicity of the arrangement, combine to make reference to the catalogue a pleasure. Teachers of physics will be particularly glad to find the forms of apparatus characteristic of the best books on physics described and illustrated in the catalogue. The new edition will form a handsome addition to the reference library in the laboratory.

Problems in Practical Physics. By F. R. Pearson. 30 pp. (Oliver and Boyd.) 6d.—These numerical exercises will serve to supplement the practical work of a first year's course of physics. Answers are provided.

Woodwork (English Sloyd). 4th edition. By S. Barter. xxiv. + 364 pp. (Whittaker.) 6s.—Mr. Barter's book is deservedly popular as one of the best of the manuals dealing with woodwork as a real and important means of education. The author's wide experience has given him exceptional insight into the possibilities of woodwork as a school subject, and the appendix containing hints to teachers on the practical details of organisation, &c., which appears for the first time in the present edition, is by no means the least valuable feature of the book. The course of work detailed in the book is an elastic one, and capable of considerable modification to suit individual tastes. The abundance of illustrations—many of them reproductions of photographs showing tools in actual use—renders the book particularly useful as a workshop companion for the beginner.

A First Reader in Health and Temperance. By W. Taylor. iv. + 219 pp. (Church of England Temperance Society.) 1s. 6d.—The author of this book is evidently a skilled teacher, and he is to be congratulated on the success with which he has worked up the commonplaces of physiology into a narrative which will undoubtedly interest children. His attitude towards the alcohol and tobacco questions is decided but temperate. On the other hand, he repeats the old classification of foods into tissue formers and heat producers. We fear, moreover, that some teachers will weary of the omniscience of the village blacksmith (not an uncle, this time!), who so cheerfully, nay, eagerly, dispenses information. The book may be recommended.

All the Year Round: Part IV., Summer. By M. A. L. Lane and M. Lane. vi. + 99 pp. (Ginn.) 1s. 6d.—This little book ought to be a great favourite with children. It is a collection of short selected and original passages on the plants and animals familiar in summer. The lessons are all charmingly written, and most of them are illustrated by pretty little sketches.

The "A. L." Nature Calendar. Compiled by J. T. Houghton. (Leeds: E. J. Arnold.) 4s. 6d. net.—This is the best school nature-calendar we have yet seen. It consists of a set of twelve monthly sheets (27 in. by 24½ in.) mounted back to back on six stout and eyeleted boards. Each sheet gives the common and scientific names (with the pronunciation) of the chief animals and plants to be found during the month, and also brief hints on farm and garden work. The lists, we are glad to see, include only such animals and plants as children may reasonably expect to find. A very useful feature is the teachers' list of standard books on various branches of nature study which is given on the January sheet.

The "A. L." Nature Study Observations. (Leeds: E. J. Arnold.) 2s. net.—A set of twelve sheets (20 in. by 12 in.), one for each month, mounted on a top-lath, and ruled and spaced for records of children's observations in nature study. It may be recommended.

Miscellaneous.

Essays in Revolt. By H. M. Thompson. Pp. 1-194. (Dent.)—There are four essays in this book, the most important being the first, "Moral Instruction in Schools." We think Mr. Thompson makes his point that moral instruction, apart from religious instruction, is required; does he think it is not given? We think he misses the point when he asks for special lessons; but he comes very near the real solution, viz., that *all moral instruction should grow out of the literature work.* You need, say, a lesson on moral courage—you have the story of Sir Thomas More; you need, say, a lesson on fidelity—you have the story of Pisanio in "Cymbeline." All literature and all history are crammed with opportunities for the teacher; and taken thus, the boy's usual "lessons" are not "lessons" at all, and therefore do not disgust him. Mr. Thompson pleads for the newspaper and modern history. In this he is right. He pleads for Greek and Latin literature in translations; in this surely he is wrong, for excepting Aristophanes and a very little Homer and Virgil, are there any poets translated? He instances Mr. Murray's Euripides, and it is quite possible that translations may yet come. The book, which does not come from a professional schoolmaster, is most suggestive, and for ourselves we think the first essay contains, unsuspected, a key which will unlock difficulties for many.

Tekel, a Study of Educational Problems of the Day. By Frank J. Adkins. 1-242 pp. (Sonnenschein.) 3s. 6d.—Much of this book has appeared before, and Mr. Adkins is known as a forcible writer. The title is misleading and catchwordy; it is not the problems that are found wanting by Mr. Adkins, but our solutions of them. But when the reader has accustomed himself to the metaphors and to the jerkiness of it all, he will be glad he saw the book. Very roughly, the writer tells us that teachers are mistrusted, ill-paid, over-worked, socially unconsidered; that classes are too big, over-taught, over-disciplined, that a good deal of our training is no training, and that, in fact, teaching is no teaching; that corporal punishment is good and grass playgrounds are better; that compulsory swimming, compulsory naval service and compulsory evening schools would all be excellent; that co-education of the sexes is bad. Obviously it is courageous to say all this; it has all been said before, but never quite so trenchantly, buoyantly and slangily. The writer coins some excellent terms, and, as we should expect, revels in epigram. "It is more wasteful to neglect Socrates in his boyhood than to poison him in his maturity"; "greasiness is not a virtue of domesticity"; "education is the calling of deep unto deep." It is a whirlwind of a book, and will carry the reader away, till he pulls up at the very suggestive appendices. The writer is surely much too sure of the want of intelligence in local authorities.

A Descriptive Handbook of Architecture. By Martin A. Buckmaster. xvi. + 188 pp. (Routledge.) 3s. 6d. net.—This book includes a short list of books of reference, and chapters on the following subjects: Classification of Styles, Synopsis of the Styles of Architecture, Comparative Classic Architecture, Greek and Roman Planning and Details, Early Christian Architecture (Roman and Byzantine), Christian Architecture of England before the Norman Conquest, English Romanesque, Early English, Decorated, Perpendicular, Vaulting, French Gothic, and Renaissance. There are seventeen plates and sixty-nine other illustrations, and a brief list of reference-books. The letterpress is very brief, hardly more than outline notes, in fact; but with the aid of the illustrations a very fair idea of the development of architecture can be got. The illustrations are well selected; the comparative plates (such as XI., Gothic Development; VIII., Gothic Moulding; III., the Classic Orders) are especially useful. The author knows his subject, and has produced a useful little handbook.

Training for Business. By A. W. Paton. 30 pp. (Dundee: A. W. Paton.) 6d.—A reprint of a lecture on commercial education, which has been amplified somewhat by the author, who is the head of the Dundee Commercial College.

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.

Instruction and Training of Pupil Teachers.

May I, through your columns, remark upon two points in Mr. Arnold's paper on "The Instruction and Training of Pupil Teachers," which appeared in your October issue.

(i) Pupil teachers who take their final examination in April, 1907, will have had five terms of preparation. In future years they will have had, in addition to this, two years in preparatory classes or in a secondary school. The course in English

literature will therefore practically cover four years, not one. In this time it ought to be possible to give the scholars a fairly good general knowledge of English literature, and surely this will be more educational for our future teachers than an exact knowledge of four books with no reading beyond. I think teachers who are enthusiasts for literature are looking forward to being able to inspire in their pupils a genuine interest in, and love for, reading unhampered by notes, and are grateful to the Board of Education for giving a death blow to the little guide-books to the classics of English literature which, I am afraid, have hitherto been too generally used by pupil teachers.

(ii) Mr. Arnold deplors the number of subjects in the examination, but I think that they really fall into no more headings than in any corresponding examination, e.g., composition naturally forms a part of English lessons and hardly ranks as a separate subject, nor does dictation.

K. WRAGGE.

Headmistress, Peterborough Pupil Teacher Centre.

The Teacher's Relation to the Pupil.

HERBERT SPENCER defined the function which education has to perform as being "to prepare us for *complete living*." It is often overlooked that complete living includes the exercise of heart and will, as well as of mind. Hamo Thornycroft, in his group "Education," shows a woman urging a child onwards above and beyond books, *but she has her arm round her pupil.* Mrs. Bryant says, "Get into natural instinctive contact with the learner's mind." Yes, but it should be contact with the feelings (in the young most instrumental in the formation of character) as well as with the intellect.

What is needed is more of *life* or life-likeness in school—more of human interest. "In school" should not be so much distinguished from "out of school" or "after school." The attitude of the teacher should be a taking by the hand with "Come let us reason together," which creates the right "at-homeness" between teacher and class; for this can be done with a class as well as an individual after a time. There should be a more human, man-to-man point of view, with regard to the worth or worthlessness of pupils' actions, and each individual should be treated with that shade of difference that is necessary for complete justice. All this in no sense means weak amiability on the teacher's part, for the relationship spoken of cannot be established until after the pupil feels that his teacher is above him in every way—in character, will and intellect. This *rapport* between teacher and taught is born of trust and admiration on the pupil's side, and a deep heartfelt interest in the lives and characters of his pupils, and in the subjects taught, on the teacher's side.

A teacher's motives influence his teaching, and those of ninety per cent. of teachers could roughly be classified as follows.

(a) The desire outwardly to please inspectors, and so obtain good reports—and the inspector becomes the end-all and be-all of the school, and is a spectre indeed.

(b) The desire to obtain as much grant as possible—and the pupil is turned into, and looked upon as, a grant-earning machine.

(c) The aim of having a "show" class—and the individual is sacrificed, while all work becomes more superficial.

(d) The examination craze—and pupils are "crammed," and ever afterwards have a distaste for the subjects they "studied."

"The remnant" of teachers have found that there is something beyond all this, and know that, "looked at from the standpoint of eternity," this indefinable something is worth all the rest put together.

It is not until after five or six years that we discover how to attain to this friendly intercourse with our pupils. Many earnest, enthusiastic, young people start teaching with high

unrealisable ideals, and on finding these unattainable, give up having any. It is these, whose minds are prepared by experience and failure, who need suggestions and fresh aims. Inspectors might do much in this direction did they have eyes to see and hearts to understand.

But, as Prof. Sadler says, "everything depends on the personality of the teacher," and not until high character and intellect is a *sine qua non*, and every teacher becomes an educationist, can the teacher's relation to the pupil be such that they can "pass on" their character and ideals, for they

". . . are the movers and shakers
Of the world for ever, it seems."

E. M. WHITE.

Brighton.

Elementary Education in Ireland.

THE sixty-first Report of the Commissioners of National Education gives as complete an account of Irish elementary education as can reasonably be expected from an official document. In a number of terse paragraphs, the Commissioners state some "pressing requirements of national education." "Practically one thousand schools in Ireland," they say, "stand in need of having out-offices provided." This is a startling announcement. "Provision should also be made for the cleansing of these offices, the cleaning of the [school] windows and the scrubbing of the [school] floors." Under this statement lies the fact that there is no public provision for any of these. "All national schools should be provided with suitable desks, maps, and charts, and with fires in the winter months." And this declaration involves the sad truth that there are Irish national schools which have no fires on a frosty December day, that there are schools without proper seats, and that there are many others which are very ill-equipped.

The Board urges the provision of "school prizes and scholarships," "if the co-ordination of primary and secondary education is to become a reality." There are no funds whatever to enable the poor man's clever child to prosecute his studies at a secondary school. "The Intermediate Board are precluded by their Act from making grants to national schools." As a consequence, the Irish bursaries are mainly the preserves of those who are well able to provide for the education of their own children.

The Commissioners "submit for the early consideration of the Government the question of the supply of books to national schools." Two reasons are assigned why this should be done: (i) education is now compulsory in some districts; (ii) books are supplied free in Great Britain. One result of the absence of a free supply scheme is that, owing to the poverty of so many of the pupils, the question with an Irish teacher is not what book on a given branch of learning is the best, but what book is the cheapest. Another result is that most teachers have to supply free, or on an exceedingly long credit system, the books which poorer children need.

An "interdepartmental committee on school buildings" reported to the Government "so long ago as November, 1902." The Board, in its sixtieth Report, "strongly animadverted on the unfortunate consequences of the delay on the part of the Government to communicate to the Commissioners that report." Apparently the Treasury has still neglected to furnish the Irish Education Office with a copy of the report. The Board points out again that "existing plans of school-houses are antiquated, that the scale of grants are admittedly insufficient, and that it is sheer waste of public money to erect buildings which are condemned by all experts as unsuitable for the purpose for which they are provided. The majority of the school-houses in Ireland have been built for objects other than educational, and, if satisfactory work is to be accomplished, must be reconstructed

with a view to modern requirements." This language is strong, but no stronger than the truth requires. The majority of Irish rural national school-houses are a disgrace to the nation.

On December 31st, 1904, there were 9,123 schools on our roll, of which 8,710 were in operation. Of these 2,593 were vested in trustees, 936 were vested in the Commissioners, and 5,594 were non-vested. "The school-houses which are vested in the Commissioners, and kept in repair at the public expense, are generally satisfactory." "A large percentage of the school houses vested in trustees are *not* maintained in a satisfactory condition." Grave reflections are made on the dilapidated condition of most non-vested schools. They are an eyesore on the landscape of civilisation.

"The average number of pupils on the rolls of all the schools for the year was 736,545." The average daily attendance was 483,897. "The percentage of the average daily attendance of pupils to the average number on the rolls was 65.7." This is the highest percentage attendance which has yet been reached. In 1888 it was as low as 58.3; in 1896 it was 65.6. There were eighty-nine committees in urban districts and eighty-five in rural districts for enforcing the law of compulsory attendance. Eight of these refused to put the Act into operation, and there is no power to compel them to do so. The Act has many loopholes; but, were it rigorously administered, there would undoubtedly be a change for the better in school attendance. In the vast majority of rural districts it has not yet been adopted.

Attention is called to the new method of obtaining a supply of monitors and pupil-teachers, viz., by appointing intermediate pupils who have passed with honours either the junior or middle-grade standards, and to the fact that for years the Board has with outstretched arm sought to embrace graduates as assistants within its fold. But the Commissioners have neglected to inform his Excellency that all graduates, so far, have spurned the Board's overtures. The Commissioners, in reply to public strictures, have tried to prove that Irish teachers are not underpaid. The method of demonstration is to compare the emoluments of an Irish teacher of a school with a certain average with the emoluments of an English master of a school of the same size. It is then easily shown that the Irish master is highly favoured. But the fact that there are so few large Irish schools, and that this paucity is owing to decades of encouragement to all sects to have schools of their own, are quietly ignored.

On teaching proper, little attention is bestowed. Regret is expressed that a scheme for higher schools was not sanctioned, and that, owing to various causes, the newer "subjects" have not been universally introduced.

W. H. ADAIR.

The Board of Education in relation to Secondary Schools.

THE October number of THE SCHOOL WORLD contained an excellent article entitled "Educational Aims and Methods," which dealt with a Blue-book recently published by the Board of Education on teaching in elementary schools. Seeing that the same Board has recently issued amended Regulations for Secondary Schools for the year 1905-1906, it will be well to consider what effect these will be likely to have on secondary school teaching. What functions is the Board to perform in that sphere, is the question that requires an answer. Financially, a Board of Education is necessary and adequate, the new *régime* having brought with it subsidies to secondary as well as to primary schools; and the mere clerical work connected with such subsidies will require a large and competent staff. But, educationally, what will the Board do to promote efficiency and what does it understand by efficiency? Does it intend to bind the master by regulation, and are registers which

have to be marked with oblique lines slanting left to right the end or only the beginning of its behests? From the regulations issued last year we are led to believe that English is the great need which must be ministered to in our secondary schools; will the Board at some future date insist with equal vigour upon manual instruction or cookery? Is recognition to be a blessing for which the headmaster is to bow his willing head, or an evil which shall bring home to him the meaning of Juvenal's words, that the worst of poverty is that it makes men ridiculous? These are serious questions, and the secondary schoolmaster should not be beguiled, by hopes of becoming ultimately a civil servant and getting a pension, into waiving them aside.

One educational authority, seated upon some self-constructed Olympus, is not competent to judge the local forces, the myriad complexities, the personal issues, which make up the educational question. It can decide what money may be spent and in what areas and in what ratio it may be distributed: there is capital material for any Board to work upon. But education is teaching, and not politics. The master in his form-room knows what his boys are like, and he only; the headmaster knows his colleagues; the parents should know their headmaster. Masters know what must be done; there is a wonderful absence of slackness and a wonderful presence of earnestness among them, considering the miserable pittances that very many receive. It is they who should do the educational work of the Board of Education. Committees of assistant-masters and headmasters in towns and districts should be formed to meet periodically, embody their views, conservative and progressive, in resolutions, and send those resolutions up to the Board to be discussed. By whom? By inspectors who know the class-room only as critics? By professors of theory, very naturally engrossed with their own apostleship and careless that the adoption of their views may magnify the master's labours? There we have another anomaly of the Board from the educational point of view. Let them insist upon a considerable length of tested service in secondary (and also, of course, in primary) schools for men wishing to be inspectors; let them democratise the system, and, so to speak, enable men to work their way up through the ranks. It is so easy for an inspector, ignorant of what teaching really means, to enter a class-room, find something that militates against his theories, and write a report which may begin a change which will minimise the value of the experienced teacher whose aims he does not understand.

The tree of organised education is planted among us, and is growing apace. But the twigs are yet young and, we hope, may be bent. It behoves the master to get a grip of them and see whither they are sprouting, and raise the forces of his order to try and prune them; otherwise the tree may cast such a shadow as shall make good men weep.

H. G. A.

[Although we publish this letter, we are unable to endorse some of the statements contained in it. If our correspondent had taken the trouble to look up the records of the Inspectors of the Board of Education, he would have found that in most cases they include good teaching experience.—EDITORS.]

Masters' Copies of Class Books.

At a certain school recently the assistant-masters asked the headmaster to supply them with class copies of the books used in the school. They were met with the reply that "workmen supply their own tools."

I should like to know the usual practice in this matter. Is it a reasonable demand to ask assistant-masters to provide "masters' copies"?

M. Y.

Dent's "New First German Book."

IN the course of your very kind and appreciative review of the "New First German Book," which we have recently issued, you mention that the pictures of the four seasons used in this book are the same as those used in the "New First French Book." If this is the case in the copy sent to you for review, it must be due to a mistake in the binding, because the old Hölzel pictures are still being used for the German books, as they are more suited to them than the pictures used in the "New First French Book," which are all typical French scenes, and therefore less satisfactory for use with the German book.

J. M. DENT & CO.

October 4th, 1905.

UPON referring to the "New First German Book," I find that the four pictures of the seasons are the same as those in the original edition. I regret the mistake, and can only offer the excuse that when comparing the pictures at the end I picked up the "New First French Book" instead of the German book from my study table, and did not notice the inscriptions or the difference in the binding of the books in the two languages.

THE REVIEWER.

The Teaching of European History.

WE observe that, in the article on "The Teaching of European History" in the current number of THE SCHOOL WORLD, Mr. A. Johnson Evans remarks that he "knows of no books for boys and girls" dealing with the history of Europe.

May we be allowed to draw the attention of your readers to a little book published by us, which we think meets this need, and perhaps has escaped the notice of Mr. Evans?

The book in question is entitled "Men and Movements in European History," and forms Volume IV. of our "Britannia History Readers." It aims at exciting the interest of young readers in the history of other countries, and the text is helped by a number of illustrations, consisting of portraits of European heroes or reproductions of famous pictures.

EDWARD ARNOLD.

I ALREADY knew of the "Britannia History Reader," Volume IV., but did not think of it at the time of writing my article. It is a very good book, but begins only with "Charlemagne." That is perhaps the reason that, trying to recall the titles of books covering the whole of the subject, it did not occur to me.

A. J. EVANS.

The School World.

A Monthly Magazine of Educational Work and Progress.

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All contributions must be accompanied by the name and address of the author, though not necessarily for publication.

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No. 84.

DECEMBER, 1905.

SIXPENCE.

MANUAL INSTRUCTION IN BOYS' SECONDARY SCHOOLS.

By W. A. KNIGHT.

Sexey's Trade School, Bruton.

IT is assumed in the following article that the case for the inclusion of manual instruction as a serious subject in the curriculum of the secondary school has been made out. The position is very different from that of ten or even five years ago. In a paper which the present writer had the privilege of reading at the Imperial Institute in 1900, under the auspices of the English Education Exhibition, the importance of the subject was urged upon secondary school authorities, and it was shown that comparatively few schools had taken up the subject seriously. It was looked upon by many headmasters, even then, as a fad and only worthy the consideration of cranks. Since that time the subject has received increasing attention, mainly on account of the large number of new and reorganised secondary schools which have become recognised by the Board of Education for the purpose of grants, one condition for the receipt of such grants being the efficiency of the manual instruction in wood or metal. Moreover, the opinions of such authorities on education as Prof. Sadler and Sir Philip Magnus cannot for ever be disregarded, while the Mosely Commission report shows the important position taken by manual instruction in American education.

The chief difficulty experienced by school authorities who propose to take up the subject arises mainly from a misunderstanding of the aim to be pursued and from a mistaken attitude due to tradition. In many schools a so-called carpenters' shop has been an institution of long standing. The instruction has been given on wet half holidays by the nearest carpenter; the boys, who have paid an extra fee, often decide what they shall make, which is generally of an ambitious character, and the instructor lends a hand when any difficulties arise. The joint product is taken home in triumph at the end of the term and proudly exhibited by the fond parents as evidence of the practical education received.

Even in the schools which profess to take

manual instruction seriously it is to be feared that only too often is it confined to the two year's Elementary Course of the Board of Education. What of the forms below and above? If manual instruction is desirable in the school, why should the pupils under 12 (or 13) and over 14 (or 15) be deprived of its advantages?

Mr. Carl Heath, in a paper reprinted in THE SCHOOL WORLD of June last, says: "Either the whole school course, from the kindergarten upwards, should provide for the progressive development of those motor centres of the brain already mentioned, or it should not do so. Suddenly to administer doses of woodwork, and as suddenly to cease doing so, is surely to misconceive the whole *raison d'être* of manual training." I regret to notice that the Special Committee of the I.A.H.M., in drawing up a suggested curriculum for secondary schools, have recommended the "sudden dose" condemned by Mr. Heath.

While heartily endorsing the idea of continuity, it is difficult to follow Mr. Heath in his contention that the individual boy should be free to join the manual instruction class, or to do some other work, and that the boy will come to manual training as he comes to football, &c. The result of this would probably be that the clumsy boy, "whose fingers are all thumbs," *i.e.*, the very boy who requires manual training more than any other subject, would be conspicuous by his absence. I would prefer to remove the subject from the same category as lacrosse, and to accord it the same treatment as—say, mathematics. Manual training should be compulsory for every boy in the school, regard being paid to age, physical strength and skill.

One of the commonest mistakes made in the manual instruction is to concentrate too much attention on the finished article (model or joint). This is, perhaps, partly due to the influence of Sloyd, where the finished model is given undue importance. The main value of the work lies in the exercises in manipulation, the detailed processes which the hand and eye must be trained to carry out with precision. Of course, the pupil must not be allowed to despise "finish"; indeed, the pride of completion will, by adding the element of interest, form a powerful auxiliary for the teacher. It is

advisable, in arranging a course, to introduce one new process at a time, and to give the class plenty of practice at this before allowing them to proceed to apply it in making a model. If it is found, in making the model, that some individuals have not mastered the processes involved, they should be set to practice it again and again until a fair success is attained.

Another most important matter is too often the cause of disaster, and brings undeserved contempt upon the subject, viz., the choice of a teacher. Beware of introducing into the workshop, without supervision, the clever but *untrained* artisan. He will certainly do all the parts of the work which present any difficulty (and are therefore most useful) instead of encouraging the boy to practise and master them for himself. The more clever your mechanic is the more impatient will he become at what appears to him the gross clumsiness of the beginner. If you employ him, give him to understand clearly that teaching is an art which requires a long training, that he must not put any of his own handiwork into the models labelled with the names of the boys, and let one of the regular staff superintend the discipline and the whole of the drawing required. At the same time, it is only fair to state that many artisans, *after proper training in the principles of teaching*, have become excellent and most successful manual instructors. On the whole, I believe the best manual instructor to be the *teacher* who has developed considerable practical skill, and who is not above adopting hints as to details of processes from practical men. Such an one should broaden his outlook and strengthen his grasp of principles by attending the Nääs and Leipzig courses, and should endeavour to spend some time in a good English engineering workshop. Probably he will also take advantage of the classes and examinations of the City and Guilds of London Institute.

GENERAL CONSIDERATIONS TO BE OBSERVED IN PLANNING A COURSE.

The materials used must be adapted to the age and strength of the pupil.

The various manipulations must be graded in order of difficulty. (The workshop is unfortunately not the only place in the school where this all-important principle is frequently overlooked.)

Difficulties should be introduced one at a time.

The course must be interesting, and afford sufficient variety.

Finished work should become the property of the pupil when a certain standard of perfection is attained. Such work must be the sole production of the pupil. Any demonstration by the teacher may be done on separate material.

Much may be said for the individual method of instruction, but, on the whole, the most convenient and the most economical of time will be the class method. All the pupils work through the course together. Those who are slow will receive extra attention and encouragement from the teacher, and little harm is done if sometimes they do not succeed

in finishing the model. The more deft pupils need not waste time after finishing their models; they can be set to help the teacher by preparing material for the next lesson, to sharpen tools, or to do simple work on the lathe.

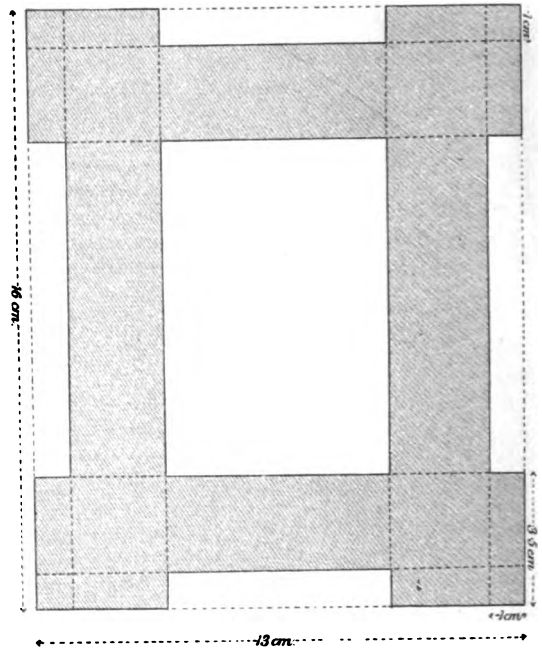


FIG. 1.—Photo Frame.

Drawing must form the basis of all manual instruction. A common error is to set the class to copy a drawing from a book or from the blackboard. In all cases the drawing should be made *from measurements of the object itself*, with explanations and help from the teacher. The best order is: (1) A lesson by the teacher upon the particular model, which should often be made wholly or in part before the class. (2) The boys make rough sketches properly dimensioned. (3) A finished drawing is made from the sketch showing, where necessary, plan, elevation, section, and isometric sketch. (This step could be usefully set as home-work.) (4) The drawing is translated into a material form.

Occasional lessons should be introduced into the course on the construction and use of tools and the properties of materials. Where a difficulty appears to exist for any large proportion of the class the work should cease while the teacher calls attention to it and demonstrates the best way of overcoming it.

The metre and its sub-divisions can be used with great advantage in the first years of the course. A good plan is to use French and English measures in alternate models.

Great importance should be attached to correct posture and method of holding and using a tool. If this is not attended to there may be an inconvenient demand for cotton-wool and plaster when such tools as the chisel is used. If cut fingers are at all frequent the fault lies in the discipline and in the failure of the teacher to realise the true aim of the work.

The amount of time available will vary with the school, but a period of from two to three hours a week is desirable and sufficient. One lesson only of one and a half hours per week would necessitate extra time, say half an hour, being used for drawing.

A SUGGESTED COURSE OF MANUAL INSTRUCTION FOR A SECONDARY SCHOOL.

1st year	} Ages 11—13	{ Cardboard work.
2nd "		
3rd "	} " 13—15	{ Woodwork.
4th "		
5th "	} " 15—17	{ Metal work.
6th "		

CARDBOARD WORK.

The ordinary school desks will suffice if a workshop is not available. If an ordinary class-room is used a flap 3 ft. by 2 ft. should be hinged to the wall, resting on a folding bracket, to serve as a glue-table. The gas must be brought to this and arranged so that a Bunsen burner can be joined up by rubber tubing.

Special straw-boards must be used to protect the desks. The following outfit can be obtained from the Yorkshire Educational Supply Co., Carver Street, Sheffield, the prices being approximate:—

For a Class of 12.

1 doz. millboard to cover desk,	s.	d.
16 in. by 9 in.	3	0
1 ¹ doz. Leipzig knife	5	0
1 ¹ doz. scissors	9	0
1 ¹ doz. bone folder	2	0
1 ¹ doz. iron safety straight-edge	12	0
Safety glue-pot	8	0
Teacher's straight-edge, 30 in. ...	3	3
Papers for covering and lining		
(3 doz.)	3	0
Cloth, 36 in. wide (6 yards) ...	6	0
Gummed cloth strips, ½ in. wide		
(1,000)	13	0
White cardboard, No. 921 (6 doz.		
sheets)	15	0
Brown cardboard, No. 928 (6 doz.		
sheets)	15	0
Sundries (glue, dusters, &c.), say	5	9

Total ... £5 0 0

Where a two years' course is in operation the annual cost will thus be about £10.

Heaton's "Manual of Cardboard Modelling" (Newmann) is a storehouse of pretty and useful models, and contains ample work for a two years' course, but the arrangement is faulty. There should, however, be no difficulty in rearranging a carefully graded selection of Heaton's models. The difficulty of the drawing should be taken

into account, as well as that of manipulation. The following order is suggested, as a result of many years' practical working in a school:—

First Year.—3, 2, 1, 5 (a), 14, 16, 12 (a), 12 (b), 27, 8, 32 (b), 34, 33, 6, 7, 13, 22, 9, 14 (a), 35, 10, 11 (a), 15, 37, 29, 30 (a), 53, 18, 54, 31, 20.

Second Year.—26, 30, 38, 21, 24, 25, 39, 29 (a), 17, 28, 19, 52, 48, 55, 41, 51, 40, 23, 36, 44, 43, 35 (a), 42, 45, 46, 47, 50, 49, Appendix.

By omitting some models which are practically repetitions of earlier ones, notably those in italics above, time may be found for the very important geometrical models in the Appendix, omitting Nos. 14 to 19, which are neither elegant nor particularly useful. No. 20, the Icosahedron, can be set as a test at the end of the course. Very interesting results follow from suggesting as a holiday task to the cleverer boys to make six regular solids.

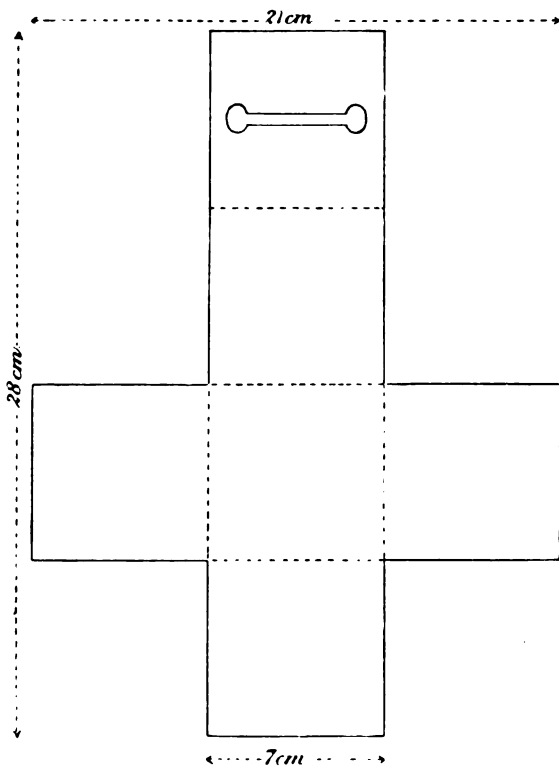


FIG. 2.—Cubical Money-box.

The operations of cutting and binding should be demonstrated by the teacher and practised by the class. In cutting especially constant care is required to ensure that the pupil makes a vertical cut through the cardboard and that he keeps his straight-edge in the correct position. With the safety straight-edge recommended there is very little danger of cutting the fingers.

The drawing should be made from the model, which has been prepared by the teacher beforehand. At first the teacher will afford considerable help, even to the extent of working out the drawing on the blackboard, with the help of the class.

¹ In some schools each boy might be required to purchase these indispensable tools, at a cost of 2s. 9d.

Every model involving a new difficulty should be made by the teacher before the class, but need not necessarily be completed.

The advantage of beginning with a material like cardboard is that the strength of the pupils is not unduly taxed. I venture to suggest that woodwork is often taught to boys who are really physically unable to use a plane properly. It is pitiful to see a youngster struggling with a jack-plane, the labour involved rendering him incapable of paying any attention to proper methods of standing or holding the tool, and the wood frequently slipping on to the floor. There is no reason

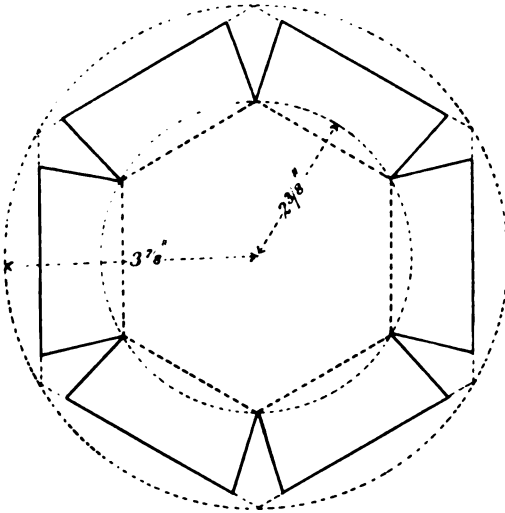


FIG. 3.—Hexagonal Tray.

why boys of even 8 or 9 should not work easy exercises in cardboard. Another advantage is that there are only two dimensions to be considered in the drawing, and therefore only plane geometry is involved; there is much gain in deferring the isometric drawing until a later period. Moreover, the tools are few, the material cheap, and the processes comparatively simple and yet preparatory to those involved in woodwork.

Complete drawings will be found in Mr. Heaton's book, but a few specimens of work actually done in class are reproduced in figs. 1 to 3.

On Models of Cubic Surfaces. By W. H. Blythe. xii. + 106 pp. (Cambridge University Press.) 4s. net.—The investigations of the author on cubic surfaces are so well known that one can count with tolerable certainty on an interesting treatment of the somewhat difficult subject of models of these surfaces; a reading of this book confirms the expectation. As stated in the preface, the object of the book is to give an outline of analytical and geometrical methods that are used in treating of cubic surfaces, not taking the more advanced part of the subject, but considering mainly anything that may help to the construction of models; the latter part of the book is devoted to a description of the shapes of the surfaces. We hope the book will find many readers; solid geometry is too apt to be a mere exercise in the manipulation of equations, and the study of models is a necessary corrective.

HISTORY TEACHING IN JUNIOR FORMS.

By A. J. PEARSONS.

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WHERE teaching is concerned, the laying of the foundation-stone in any subject, and especially when the subject is history, is quite unlike the brief ornamental ceremony performed in public by a distinguished novice in stone-laying. If this stone is to be well and truly laid, each of the ceremonial conditions is reversed, for not one of the operations of teaching makes a greater call on the patience, the inventive skill, and the humanity of the craftsman, not one is half so vital to ultimate success, as the task of beginning right.

The mere statement of this fact sufficiently indicates the unwisdom of devolving this work, as is often done, upon the youngest and most inexperienced member of the staff. The function of the master of the Junior Form is not to communicate, however successfully, the mere facts of a restricted syllabus, but to open doors, to hang pictures, to awaken interest, to create an atmosphere of pleasure in the actual process of learning.

With young boys the essential business of the teacher is not to impart knowledge, but to preserve that normal attitude of enquiry natural to a young child, and, by supplying suitably prepared material, to foster the growth of happy satisfaction and possession which springs from mental effort. These considerations must influence all the early work. They call for something higher than book-work, more strenuous than repetition; for while the teacher should not be much concerned with what fact the boy is gaining, *how* he is gaining it, and the attitude of his mind in and towards the process is of the greatest moment. In teaching history, ultimate success depends upon teaching something more than historical facts.

It will be found advisable to have a varied syllabus, capable of broad treatment. The attempt to memorise for reproduction one restricted period of history—say the Norman in England—is not for us. Lists of battles, lines of kings and chronological tables are the dry bones of history, not meat that can be digested and assimilated by the child-mind. On the other hand, we must do something more than merely tell the interesting tales of history; our boys are beyond the milk-and-water stage, and later, if our present work is to be justified, will feed themselves with strong meat. The history lessons must embody something of the historical spirit; they must not form a series of isolated compartments, but should show some attempt at sequence and continuity. This condition causes some difficulty, but a very satisfactory course can be constructed by connecting historical facts with the gradual original discovery of, and the boy's gradual acquaintance with, the surface of the earth, through the systematic use of a series of gradually extending maps.

Whatever the course decided upon, to be of real value, its details must be drawn up, and pre-

arranged and considered by the individual class-teacher. The knife of forethought must divide and sub-divide the loaf of fact. A hand-to-mouth existence is a mark of poverty as well as an extravagance. This preparation of the syllabus is a duty the teacher owes his responsibility. It provides a wide view and a just estimate of the work of the term or year; secures correlation of lessons; ensures correct proportion; gives a *personal* value to the scheme. By no other way can be reached that spontaneity and versatility in the presentation of a subject which is one of the secrets of the successful class-master.

We come before the class with the matter of the lesson well prepared. We are ready to tell—are they ready to hear! Are we about to pour another trickling stream of talk into a pitcher unable to avoid our importunity! With young boys we soon discover that *how* is more important than *what*, and notwithstanding our excellent matter, both teacher and pupil will be disappointed unless we have found an effective method of presentation. If we fail here, the child gradually loses interest as the term proceeds, and the result may be a change of attitude towards other school subjects,—a mental deadening.

How to find an effective Method.—Let us recognise at the outset that every lesson is a mutual arrangement; that we are powerless to help the child without the child's help. Does he not love "to help"? He lives to discover, to "find out," and he works hardest at the thing called "play." He dislikes to "do nothing," he sees the unreason of "sit still and pay attention," and that which he pays with reluctance to superior force, he gives, and gives freely to his captain-comrade. Such is the average boy, ready to be our aide-de-camp if we will; otherwise a mercenary trooper on a forced march. This average boy must have as large and as active a part in the lesson as possible, and while the usual form of the history lesson is inevitably that of the narrative, we must find means to ensure to him his share of the work by putting ourselves in his place, and looking at the lesson from his standpoint.

The boy offers Love of Action; how shall we satisfy it?—Failure in history teaching is inevitable if the teacher sits down and "takes" a lesson from the text-book in front of him. "Thou shalt be alive" is a commandment especially binding upon the boy's first class-master. Children are imitative and live in the present; therefore in lessons which lend themselves to the treatment we use the present tense, and speak as if at first-hand. Go farther, and act the part wherever possible. Be Horatius! call out Spurius Lartius and Herminius from the desks, and guard the gangway with them on either hand! Revise the story in running dialogue with the boys, so that they may share some of the feeling of the men they represent, and the class thus made familiar with the story—say of Horatius—will eagerly and intelligently follow the reading of the selected extract from Macaulay. Such an opportunity as is here suggested should be used especially to lead out

—to educate—a dull or seemingly uninterested child; he will probably exhibit traits hitherto unsuspected, which will help us to help him more effectively.

The boy offers Imagination; how shall we use it?—The history lesson readily provides us with a time of wonder. The adventurer is sure of an interested audience. "Long ago" and "once upon a time" still secure the respect denied to "in the year 597." Therefore make the "setting" of the lesson attractive. Marco Polo is Jack of the Beanstalk for this purpose, and a heart brave under misfortune the Fairy-godmother in Joan of Arc. That Columbus sailed to the New World is a fact of little value to the boy who has not been led to feel something of the spirit which animated and sustained the Discoverer. Prepare the ground before setting the seed, for the mind is alert to receive that which it wants to know.

The boy offers Longing for Variety; how shall we meet it?—The less exercised faculties are the sooner tired, and young boys soon show signs of fatigue. Lessons should be designedly short at first to avoid over-taxing their immature powers. Nevertheless, a timely recognition of the need for variety will enable us to keep the working interest of the class intact for a sufficiently long period without change of subject. At the lowest computation a boy has five senses that clamour for satisfaction, and we should exercise as many as is possible in class. Simple and clear as our language will be, there must be some occasions on which it fails to carry our meaning, some details that we cannot thus make clear to the child-mind. Call in the eye to aid the ear; the complement of the narrative is the picture, and the boy will have a clearer notion—say of a tournament—from seeing the picture than from the narrative alone. Boys appreciate drawings and sketches made by their own teacher, however crudely done, and when occasionally the class is allowed to copy a drawing or reproduce it from memory, the delightful ten minutes such an exercise takes is time well spent. No teacher should fail to develop whatever degree of power in this direction he possesses. The ability to indicate simple shapes in outline on the blackboard is easily acquired, and the result is a pleasure as well as an educational asset of great advantage to the class. The appeal to the eye is a change of medium, it exercises another sense, and a judicious teacher will employ it to get his matter *home* to the child-mind, using it in such a way as to call into play the sensations of expectancy and realisation which are the salt of interest. In addition, small articles from the school museum or brought by the child himself should be welcomed and used to reinforce the lessons. Hand them round and get the boys' ideas about them. One probably feels at first that this is a trivial waste of time, that the real lesson is being unnecessarily delayed; but at the end of the course it will be found to have been well worth while, in the strengthened reason, the increased power of expression, the settled habit of observation, as well as in the *established atti-*

tude of interest in the history lesson manifested by the children.

As to the wall map—always in evidence during the history lesson—should there be only the ordinary full map available, employ with it a series of brown paper masks with cut-out centres of various sizes, thus screening off all the *unknown* and showing only the known world at the period with which we are dealing. Let this map be used, and used by the boys. Let *them* come out and point, and interrogate one another. Familiarise them with the salient features of travellers' routes and the geographical position of such places as the Pillars of Hercules, the Great Sea, and Father Nile. A few minutes with the map at the commencement of a lesson will serve as a rapid revision, and the right chronological order of historical events will thus become unconsciously associated with the colours and positions on the map. The filling-up by the individual boys of an outline map, with coloured chalks, rapidly and in the order in which the countries were originally mentioned, is a pleasurable change and an additional aid to the sequence of events. Use the map to link one lesson to another; frequently place it in its proper position—that is, on the floor with the North towards the North. With boys of this age seeing is a great aid to believing, while hearing often conveys only the bare fact.

The boy who "wants to know"; how shall we deal with him?—The attitude of enquiry is strongly marked in all normal healthy children, and should be as apparent in the normal healthy class; but children differ greatly in this respect, and the spirit of enquiry may even appear wanting in those whose previous training has been one rather of repression than control. At any rate, our duty is clear; to confirm and direct the inclination to seek further knowledge. The child in the act of asking a question is not only wishful for the answer, and hence more likely to retain it, but is showing that self-prompted interest we should be anxious to cultivate. The boy who asks is our sworn ally; therefore, and especially at first, we will concern ourselves largely with him. It is much easier to repress the enquirer than to satisfy him; therefore err on the more difficult side. Use him to provoke another, slower or more diffident than he, to ask or to answer his question; *emphasise the child's right to know*; commend the thoughtful question; present a fresh aspect of the matter for the boy's decision; never simply *tell*, when you can help the boy to *discover*. Give a few minutes regularly for the children one by one to ask revision questions of the teacher and of each other; remember the mutual arrangement. It is good at times purposely to omit a conclusion, or to make two apparently conflicting statements in a narrative, in order, not only to prove the reality or to expose the conventionality of our class-attention, but also to provide an opportunity for the legitimate question. On the other hand, if one is troubled by the "needless question," apply the remedy to the individual, not to the class, or necessarily before them.

The give-and-take method here outlined thrives only in an atmosphere of sympathy, that elastic medium between teacher and taught. Never "make fun" of the spontaneous question; sarcasm and irony are worse than useless with little boys. After all, an enquiry is *not* an impertinent interruption, it is a natural appeal for direction; it may be an indication of rising interest.

Particularly at the commencement of his school life, it is important that no child should be for long discouraged, or fail for some reason to be brought into line. Method and manner must be adapted to meet the special case and to enlist the individual boy whilst maintaining all the class "on the march." No boy should have cause given him to assume that he is a "duffer" and is therefore permitted—automatically as it were—to fall out of the ranks. War must also be waged against the passive attitude of the little boy who is always *good*—like the cow and perhaps for the same lack of intelligence. It should rather be expected that a young child will exhibit certain spontaneous movements of body and limbs when exercising his mental powers. Such are not essentially disorderly, and it is a mistake continually to repress them in order seemingly to ensure an even class-temper. They are separate and easily distinguishable from the deliberate act of wilfulness or disobedience, which merits punishment, and it is foolish to exalt them to this dignity by forbidding them.

"We two" then, will be found to guide us to an effective method. "We two"—the master *and* the boy—both actively sharing the lesson, each engaged, not in an amusement nor in a task, but in a vocation. By this method we may at least hope to foster the natural attitude of the child-mind, to take advantage of what the young boy can offer, to utilise his love of action, to appeal to his imagination, to satisfy his need for variety, to strengthen his habit of enquiry; to *e-ducate* him during the history lesson. Thus, too, there may be established in some child-mind, not merely the disposition to know, but a firmly grounded purpose to achieve knowledge—a foundation upon which there may at length arise a building of worth, a habitation of wisdom.

So far only the narrative concerning the past has been dealt with. There are other forms which the history lesson may take occasionally, with considerable advantage to the class. These and an outline scheme of lessons will be included in a future article.

A Primer of Logic. By E. E. Constance Jones. 188 pp. (Murray.) 1s. 6d.—The late Prof. Jevons's primer on logic has held the field a long time. Miss Jones's book is an *essay* in the same direction as that of Prof. Jevons, viz., a book to popularise the study of logic. It is very ably written. Proficients in logic will find the book suggestive, whilst the beginner will be interested from the start and find that the text-book brings him right into the spirit of logic. Miss Jones's book is excellently provided with examples of an interesting and recent kind, and the examination papers at the end are up to date. We cordially commend this book as the outcome of sound experience in teaching.

NEW METHODS OF MODERN LANGUAGE TEACHING AND THEIR RESULTS.

By G. H. CLARKE, M.A.

Headmaster-elect of Acton County School.

THE pains taken to improve methods of modern language teaching have resulted at least in reformed tests of teaching and in stimulated teachers. The zeal of reformers has abolished the slow-going old form-master who propounded theories on the use of "expletive *ne*" from the pages of Dr. W. Smith's French course, but dare not read aloud a sentence in French and could not speak one, has produced a whole host of better school-books, and has imparted a vigour and a variety into modern language lessons that no schoolmaster educated in England dreamt of some years ago.

To keep on a level with this higher standard, teachers go abroad to improve their knowledge of other tongues, helped, at places of education that are abreast of the times, by donations which increased general interest in the world abroad has prompted authorities to grant. As a result some little power of speaking foreign languages, some approach to a native pronunciation, can now be expected from a student, and often attained; the ability to understand a Frenchman speaking his own tongue, and even to make a little speech in reply showing some acquaintance with Continental ways, is far from being so rare as it used to be. Masters who are well fitted for their work naturally turn out better scholars than those ignorant of what they were supposed to teach.

We may certainly admit that the teacher of modern languages has improved lately; a far more difficult point to decide is whether the "new method" carried out in its entirety proves satisfactory at an English school. As an excuse for venturing to suggest that some reform methods are open to criticism, we will quote Prof. Sadler's dictum: "There is no single educational formula in which at present we can explicitly believe." In former days even, boys, taught on a rational system by a master who knew his subject and delighted in his work, were able to translate "unseens" into English, do as good "proses" as are done now, had a fair knowledge of grammar and could write from dictation. They were able, probably, to answer a few simple questions in the foreign tongue.

Now what do we find? That Inspectors, some of whom in their youth may have written impassioned treatises on the "new method," are recommending a course of merely improved "old style." That they declare boys trained on the new lines to be quite incapable of translating books suitable to their age, and suggest that set exercises are more valuable than free composition. That sensible critics condemn schools once famous for modern language teaching, because, since the new method has been adopted, boys are totally devoid of vocabulary. That

many masters at home and abroad who had worked on reform lines have abandoned the plan and returned to a modified "old style." That reform books, when reprinted, appear with the addition of grammar—that red rag to a new methodist—and assume the familiar face of the old "French courses." That Prussia seems to have turned against the use of phonetic symbols. That the "French Professors," generally, condemn the reform system.

If we leave generalities and pass in review some of the instructions given in an article on the reformed method, in the introductions to class-books published to enable masters to teach by the new system, and in official programmes, we shall notice at once that reformers have no common platform, a fact that tells greatly against the spread of their doctrines.

(a) "AN AMALGAMATION OF THE OLD AND NEW METHODS OF TEACHING FRENCH."

(THE SCHOOL WORLD, August and September, 1904.)

"Period to be covered: ten to sixteen."

"Course begins with phonetic drill."

"The transition to ordinary spelling from the phonetic transcript requires a great deal of care."

"In the second year of the elementary stage, essentials of grammar are to be commenced."

"Hölzel's pictures are used."

"A sparing use in the highest forms of translation from English into French."

"The reading-book to be the basis of instruction."

"In the third year of the intermediate stage, such an examination as the Joint Board (lower certificate) is prepared for by reading a simple reading book, as 'Une aventure du célèbre Pierrot.'"

(No mention is made of the result of this method of preparation.)

"In the advanced stage more time is devoted to syntax, literature, historical grammar, and translations into French."

(b) "NEW FRENCH COURSE FOR SCHOOLS."

(Perry and Rheum.)

"Period to be covered: one year (ten to eleven)."

"While recognising the usefulness of phonetics, we should regard the accent of the native teacher as the most valuable source of good pronunciation."

"The theory that attention should, for a considerable time, be devoted to the training of the ear, and that writing interferes with this object, is a mistaken one."

"In a second course, a skeleton grammar with a few clear examples is far better than a book in which grammatical rules are intermingled with artificial and incoherent sentences in illustration of them."

"At the earliest stage . . . exercises and translation are out of place."

"In the vocabulary the English equivalent of the French word has been given."

(c) "HINTS ON TEACHING FRENCH."

(W. Rippmann.)

"The employment of the mother-tongue by the pupil is reduced to a minimum, and he is encouraged as much as possible to make a free and natural use of the foreign words he has already acquired."

"All translation from the mother-tongue is avoided."

"The new materials are examined from every point of view; everything remarkable in grammar, spelling, order of words, is

noticed, and either connected with what is already stored in the pupil's mind and put into its proper place, or, if it is something quite new, it is carefully kept until the time when it can usefully be employed; all the materials are suitably arranged, and the rules deduced from them."

"The rules are given in French."

"The vocabulary is in French."

(d) "PRIMARY FRENCH COURSE."
(Siepmann.)

"Is it not the case that many followers [of leading reformers] are actually trying to teach modern languages in a parrot-like fashion, treating grammar as a negligible quantity, and having little regard for mental discipline or literary training?"

"The reader is the nucleus of the book. The grammar collects and systematises the phenomena of accident and syntax so evolved. The exercises apply what has been learnt in the reader and in the grammar."

"All explanations which break new ground should be given in the mother-tongue."

"An English vocabulary is given."

(e) "FIRST FRENCH BOOK."
(Mackay and Curtis.)

"The exponents of the method are men of strict scientific attainments."

(How does this agree with the unscientific statement that the imperfect subjunctive is formed from the preterite by adding *se* to the 2nd person singular; e.g., *donnas, donnasse*?)

"French is intended to be used as the medium of communication as much as possible; commands are given in French; the pupils describe in French their actions as they do them."

"Give frequent dictation."

"Portions of the *questionnaires* may be set to be answered in writing as home tasks."

(f) We extract the following at random from

OTHER BOOKS:—

"Speaking the foreign idiom [whatever that may be] is more important than reading or writing it."

"The new method loses much by refusing to admit the claims of translation into the foreign tongue."

"Students should be trained to use an ordinary French-English dictionary."

(g) The Prussian "Lehrpläne" state: "That grammars written in French or English are to be excluded from use in Prussian schools for students of French or English"; and that "the goal to aim at is, power to read authors of the last three centuries, together with knowledge of grammar, literature, and history of the language in question, as well as practice in oral and written work."

(h) The French "Plan d'études" declares that pupils are to have a simple grammar in which they will find a systematic collection of rules and paradigms to refer to.

These extracts have been taken from books and programmes easily accessible; it would not be hard to quote from other similar works and show even greater discrepancies. Enough has been given to prove that the reformers are not agreed on:—

(1) The proper method of beginning to teach the foreign language (*i.e.*, phonetically with special script; orally; with or without written work).

(2) To what extent translation, grammar and exercises may be permitted, if at all.

(3) Whether vocabularies should be used, and whether they, grammars and the teaching generally, should be in the mother tongue.

(4) Whether a dictionary should be allowed, and if it is allowed, in what language it should be.

The original idea that children should learn foreign languages in the same way as they pick up their mother tongue seems to have been lost sight of, under the impression that there is a royal road to learning. This natural way of picking up a foreign language is, of course, a good way, but a slow way except in foreign countries. A child begins to learn its own language at a very early age, it practises during all its waking hours for many years; but it is not likely to be able to spend more than an hour a day (shared with others) on the foreign tongue, which is, as a rule, begun later than its own.

It is largely to make up for this lack of time that consecutive grammars have to be used. There is no chance of a child covering sufficient ground to be able to collect all the various forms it needs, even if its mind were logical and receptive enough to retain and piece together the scattered materials that it meets with. There is an old Latin proverb, which is very applicable: "He who would learn without books might as well try to drink out of a sieve." Further, if we do allow a grammar to be used, why should we put difficulties in the child's way by forcing it to use a grammar written in French or German? We have not long done away with Latin grammars in Latin; why revert to such trials in other tongues? let us consider "the child-mind." Some use, by the teacher, of the foreign language in the class-room is different. Here, in case of misunderstanding, help can be given at once. How often does not a child give an answer in French which it cannot translate into English? The novice, supposing by the reply that question and answer are understood, says, "Splendid!" and does not stop to enquire whether the pupil is not guessing. Repetition of phrases learnt by rote, even if understood, is of no educational value. For the sake of clearness, therefore, it is well to use books written in the mother tongue. Many "reform" books are, of course, most valuable; and moderates will use them with as much profit as whole-hoggers.

Some new method books will perhaps not commend themselves to the faint-hearted: for instance, an elementary translation book with a French-English vocabulary and notes entirely in French. Such a book is of little use for young pupils, who are no more capable of making out the notes than the text. In this case, as in the case of an accident written in French, the zeal of the author merely hinders beginners.

When comparing the methods of reformers, as one is struck by their dissimilarity of procedure, so one wonders at their claims to produce results. It would seem that more depends on teaching than on the system employed. Still, one sometimes fancies that many writers of "Courses" have little actual experience of English boys and their

peculiar temperament and imagine that they are all logical beings thirsting for knowledge. We all know how easy it is to lay down a system on paper and how hard it is for someone else to attain the proper results! Every Englishman thinks he knows all about agriculture and education and sometimes attempts them with disastrous results.

The order of importance of branches of modern language teaching is often assumed to be: speaking, reading, writing. Seeing that, of students of French, everyone will be the better for knowing how to read French books, it seems as if the ability to translate out of the foreign tongue should come first in order. Further, as very few of those English boys who study a foreign language will ever have a chance of speaking it, and as all will be the better for knowing how to write it, the importance given to speaking is scarcely reasonable. A boy who can translate from a foreign tongue, knows something of its grammar and is able to write it to a certain extent, will easily learn to speak it if he goes abroad, and will reach a higher standard in the same time than he could talk about the hay crop of "Bontemps," but knows of little else.

Should he never have occasion to speak French, his knowledge of the written language will have been of educational value at least, and will have put him in possession of the power to appreciate French literature.

But this literary power cannot be attained by learning to rattle off a certain number of answers to commonplace questions. Conversational language is so different from literary language that each requires a special preparation; consequently it is unwise to confine one's teaching to a single branch of the subject and that the least valuable.

We have seen that reformers place much stress on a phonetic training and little on an acquaintance with historical development of language. This is doubtless one of the reasons why great French scholars, such as Prof. Koschwitz, reject the method. To say nowadays that one may not go to the root of matters and refer to historical grammar to explain a difficulty, and even teach historical grammar is—in face of the work of the heurists—an absurdity.

A knowledge of phonetics is certainly of great value to the teacher, but of little educational importance to the schoolboy.

A special study of phonetics is as much outside the province of ordinary modern language teaching in schools as a special study of geology would be in every-day class teaching of geography. There is a time and a place for both phonetics and geology in the case of certain students, but there is no room for them in usual school work. Further, owing to lack of ear, it is as much waste of time to explain phonetics to some boys as it is to try to teach certain boys music and singing. Far more important than phonetics is a knowledge of foreign customs and an insight into Continental life, in order to remove the Englishman's insular ignorance and prejudice. The letters of the alphabet

should always be designated by the names they bear in the language under discussion; but let not the too short time devoted to modern languages be taken up with a fruitless attempt at mastering the science of phonetics.

If, then, the new system when carried to extremes is, in one way, as unsatisfactory as was the old one in another, what is to be done?

In the first place, let no modern language teaching be entrusted to a man who has not a thorough knowledge—colloquial and literary—of the language in question. No intelligent master thus equipped should fail to inculcate in his pupils some power of speaking the foreign tongue, and at the same time to educate as well as teach. Continuous oral teaching is of little value; mental training cannot be obtained from echoing answers to more or less familiar questions.

The failure to teach well is far less often the fault of method than of the master himself, who is naturally unable to impart what he does not know. Add to this the fact that the teacher is probably allowed too short a time for his work, and it will be clear that the lack of knowledge of modern languages so often complained of is not necessarily due to old-fashioned methods. A teacher, not knowing his subject, attempts to teach it in less time than even a competent man would require for the task, and consequently fails.

Beginners at an early age should have a French lesson of not less than three-quarters of an hour daily. As other subjects begin to press for a place in the curriculum, it may not be possible to devote so much time to one language; but we may lay down a definite rule that it is better not to study a modern language than to allow it as a minimum less than three hours a week, divided amongst four periods.

It is no easier to attain a proper knowledge of French, out of a French-speaking country, than it is to acquire a sound knowledge of Latin. There may be some who will not agree with this; but, before believing them, let us ascertain whether they are sufficiently good scholars in French and Latin to have a right to speak.

There are many reasons why foreign modern languages are not well learnt at English schools; bad teaching is not the only one. In many cases the unfortunate boy suffers from an intellectual surfeit. An overcrowded time-table is the source of "many dangerous" things, of which "little knowledge" may not be the worst!

It must not be forgotten that of the three languages—English, French, German—English is far the easiest, German the hardest. Consequently no comparison can be drawn between the hours allowed to a German schoolboy in which to learn English and those devoted in England to learning French.

SUGGESTED SCHEME OF WORK.

(1) Up to the age of *twelve* let the pupils use some easy books, such as: "McDougall's Preparatory French Course," and "Siepmann's First

Year," learn nursery rhymes and be taught from pictures. As soon as possible the learners should begin to read a simple translation book, do easy exercises and be shown how the grammatical forms they meet with are connected and fit into a whole. For this purpose an elementary accidence is required, an accidence that is full and complete in itself, and is not divided into sections interspersed with exercises and syntax. Compilers of grammars are afraid of being thorough, forgetting that the teacher ought to be able to make his own selection from the book he uses. The pupils may be taught to read in phonetic script as well as in ordinary texts. Pronunciation can be improved by drill, and practice in answering questions be given. Simple dictation will fill up the programme.

(2) From *twelve to fourteen* boys will profit by the use of such a book as that by Mackay and Curtis, intelligently employed, together with practice in writing exercises and simple prose, and a considerable amount of consecutive accidence.

(The accidence given in most "courses" is insufficient and piecemeal.) Common-sense will suggest appropriate relationship between exercise and grammar. For translation, the elementary texts published by Rivington offer a considerable choice; Charlin's "French Reader" (Hachette) may also prove useful. Oral work and dictation must be practised frequently.

(3) After the age of *fourteen* pupils may be introduced to Duhamel and Minssen's books on composition; when they have finished the grammatical portions of those books they should be allowed to work through a larger grammar. As translation books, Blackie's or Black's cheap series will answer and, for use in preparation, Gasc's convenient small dictionary will serve. Dictation will still prove an excellent form of teaching spelling and pronunciation.

When working at composition boys should not be left to do their *proses* alone and to show them up written out. First, the exercise (and this applies to all written home-work of a similar nature) must be discussed in class. The pupil will next prepare the French for the English prose. His knowledge is eventually tested both by his writing out parts of the prose, without any help from the vocabulary, and by answering questions on it or translating extracts *viva voce*. This method of doing "*proses*" soon leads to a command over both the written and the spoken language.

As regards the form of elementary exercises, we may point out that it is difficult to see what advantage the translation of such "reform" sentences as "Il a peu d'amis," "l'homme of whom vous m'avez parlé," can have over the turning into the foreign language of: "He has few friends; the man of whom you have spoken to me."

If the difficulties of an exercise are discussed beforehand with the form that is to do it, there is no object in setting severely peptonised material before the learners. It is best to give definite

material to turn into the foreign language. Till boys are beyond the stage at which they know little of grammar and syntax, it is not an advantage to allow them to shirk difficulties, as they do if they write down a "twice told tale" and call it free composition.

As before, systematic questions and answers must be kept up, and boys encouraged to learn poetry for recitation. Dictation, and conversation on passages read, or on tales told, must not be forgotten.

(4) At about the age of *sixteen* more difficult composition and translation should be tackled: Duhamel's "Advanced Prose" and modern French plays, the subjects set for the Joint Board (Senior) Certificate, &c., will afford a choice.

Some historical grammar should be taught.

But, as before, dictation, oral work and recitation must be continued.

CONCLUSION.

Such is an outline of a course that will produce good results if it is carried out by capable masters who are able to speak the foreign tongue they teach. If, however, the teaching is not uniformly good throughout the school, no system will avail. Uniformity of method, consistency in such details as nomenclature and a definite progress in the course of instruction which covers the whole ground and leaves no important patch of grammar unexplored, are essential.

A common-sense application of the suggestions made above, though they may be as old as the hills, should enable a teacher of modern languages to turn out pupils able to translate, write and talk a foreign tongue so far as this is possible at an English school.

SCHOOL BOARDING-HOUSES.

By A HEADMASTER.

THE idleness and luxury of the overgilded youth is appalling. . . This applies chiefly to life at home; at school there is often a contrast, sometimes a onesided and unreasonable contrast, leading to withholding even of necessities, in the interests of misplaced economy. Insufficiency of food and permission to eke it out by purchased supplies from a neighbouring tuck-shop is a miserable custom. . . . Parents ought to rebel against it; they ought not to be called upon to send hampers, nor to supplement in any way the sound and wholesome and sufficient food for which they pay. If the master is incompetent, as he probably is and almost ought to be, to keep a healthy and economic hotel and supervise the housekeeping, so as to see that only good things are bought and are properly cooked and supplied, then let it be done by some one who is bred to the business; and let the profits of food-supply no longer supplement the inadequate fees paid for the proper work of education. (Pp. 132-133.)

I incline to think that if a fair living could be made by assistant masters without the terrible responsibility of keeping a juvenile hotel, full of boys at a most troublesome age, few

would undertake it. Those few would probably have a genius for the work and might do it well, but it is unlikely that they would be likewise able to take the ordinary share in the intellectual work of the school. (P. 137.)

From "School Teaching and School Reform."

—SIR OLIVER LODGE.

A BOOK written by Sir Oliver Lodge cannot be lightly passed over; remarks like the above must make the reader stop and ask himself, "Is all this true?"

It is not my purpose to give any direct answer to the question, though a discussion of it would be of the utmost interest, but rather to suggest briefly what an ideal boarding-house should be like, and in particular on what lines the feeding arrangements might run.

THE HOUSE.

The main points to be observed in planning a boarding-house are space, light, air and solidity, not to mention such obvious necessities as good drainage, &c. No bedroom should hold more than ten boys, and no washing should be done in them, but in a special lavatory close to each bedroom. These lavatories are to be furnished with taps and tip-up basins, one for each boy. The bathrooms should be conveniently near and in considerable numbers. If studies are provided they must be properly ventilated, warmed and lit. Should there not be sufficient studies to accommodate all the boarders, some comfortable room or rooms must be set apart for use during leisure time. Leisure should be made a humanising period, not a time for general rowdiness.

The dining-hall should be reserved for meals, if possible. It is difficult in any case to keep a room fresh in which four meals are served daily; it is almost impossible if the hall is used as a classroom.

These general remarks having brought us to the refinery, let us consider what the hours of meals and what the *menu* should be.

THE FOOD.

In schools that rejoice in work before breakfast, there ought to be provision made for supplying some bodily support before early school begins—for example, either porridge and milk or cocoa and biscuits.

As soon as the first hour is over, breakfast should be ready. This may consist of tea or coffee, bread and butter, marmalade, with fish, eggs or bacon, &c.

For dinner there need only be meat with plenty of gravy, vegetables or salad, pudding, bread and cheese.

At tea there should be provided tea, bread and butter, jam, cake.

Supper will perhaps not be necessary for the smallest boys in the house, but the elder boys will certainly want something to eat between six o'clock tea and the first morning meal. Light and digestible food should be supplied, such as soup, bread and butter, potted meat, light puddings, and milk.

If you want to make a boy gluttonous you will first starve him and then encourage him to buy confectionery.—LODGE.

On the face of it this is a fair claim, yet can the average school say, "We feed our boarders so reasonably that they do not spend much money at the tuck-shop"? The ideal feeding should be sufficiently good to induce boys to satisfy ordinary hunger at school meals; it should be varied and dainty enough to make frequent recourse to other means of satisfying their hunger unnecessary.

Many schools may claim that the *menu* shown above is exactly what they provide; but there is a difference between food on paper and food on the table of the school dining-hall.

Recollections of college halls will serve to show how an excellent joint can be spoilt by bad carving; how soup can be made unpalatable by grease; how the necessary cabbage can be sent up as hard as raw vegetable-marrow.

At schools we have all these drawbacks and others: bad butter (luckily supplied usually in small quantities); jam, innocent of fruit, but peppered with seeds; vile tea; coffee made from dates and chicory; tough meat; nasty puddings. The whole is served in a slovenly way, and apparently intended to be left uneaten, in the very short time allowed for a meal.

EXPENSES.

Yet a house of twenty or thirty boarders can be fed excellently on a good deal less than ten shillings a week each. If we assume this outside figure, the annual cost of twenty boys at ten shillings a week for thirty-eight weeks amounts to £380.

Admitting that the boarding fees are £50 per annum, the balance left for domestic expenses and for profit will be £1,000 - £380 = £620, at the very least, and will probably be much greater.

Continuing the calculations, we might put down rent, servants, &c., at £400 in round numbers.

We have left £220, evidently a small balance, even for an ideal house. Still the gain, if it be only £220 on goods sold at £1,000 (the total boarding fees), represents a profit of 22 per cent.—no mean return.

But few boarding-houses of over twenty boys, unless they are run on very cheap lines, would show so small a return; and the profit on a house of fifty boys paying high fees must be very much higher.

Can we deduce from these high profits the fact that boys are as a rule very badly boarded and lodged at English schools?

Mathematical Curves. (Brooks).—The parabola curve was noticed in THE SCHOOL WORLD for April, p. 155. The curves now before us are also made in transparent celluloid, and are, so far as we have tested, accurately constructed. The set comprises an ellipse, a rectangular hyperbola, the graph of x^3 , and a cycloid; the price of each curve is one shilling. For many purposes, especially for the discussion of geometrical properties of the figures, these curves will be of great use.

AN ENGLISH LITERATURE SCHEME.

By FRANCIS G. HARMER.

Headmaster of Leeds Middle Class School.

THE main objects of the scheme are twofold: (1) To enable a pupil to understand the expressed thoughts of others and to give easy and fluent expression to his own; (2) to cultivate a taste for reading, to obtain some acquaintance with good literature, and to learn how and where to extend that acquaintance.

The first essential, therefore, will be to give the pupil good models with plenty of variety, and then to see that every expression of his own thoughts, whether orally or on paper, is correct.

The examples for reading have been taken from the general range of English literature to give breadth to the pupil's horizon. Keeping to one author or period is apt to result in narrowness and imperfect appreciation; hence the suggestion of such a book as the "Golden Treasury." The works mentioned are only suggestive, and the teacher, while keeping generally to the course laid down, will choose from them such methods as will best fit in with his own ideas, or he may substitute others of the same type. Indeed, it is often better that the teacher should himself select his own material, as naturally what he knows best and appreciates most he will best be able to teach to others. No notice has been taken of the correlation of this subject to any other, but where a history course is taken in the school it might be advisable and profitable to choose a period of English literature to correspond with the period taken in history.

It will, of course, be necessary to have texts for every pupil. This will involve a considerable outlay in books, but it need not be an expensive item. A very large quantity of good and suitable matter may be found in Stead's "Penny Poets," while most of the authors or works mentioned may be obtained in cheap 6d. or 1s. editions. There is a good selection of Addison's "Essays" in Cassell's National Library (6d.). Lamb's "Tales" may be had in a 1s. edition, whilst Hazlitt's "Spirit of the Age" and "Essays of Elia" are published in the World's Classics at 1s. Most of the other works mentioned are easily obtainable in cheap form.

There should be at hand a good lending library—to supplement what has been read, to allow the pupil access to the books referred to during the course of the lesson, and to carry him on further with any author or period if he wishes to go further.

Notes are appended to each year's course, but there are a few points which are applicable generally and should always be carefully borne in mind.

1.—(a) In reading texts the teacher should endeavour to obtain: (i) general interest in the subject-matter; (ii) literary interest in the form; (iii) historical interest in the authorship.

The first of these points will have more attention

paid to it in the first and second years of the course; the second throughout the course, but particularly in the third and fourth years; whilst the third point will be left more especially for the fourth and fifth years.

(b) Every teacher of literature should be a trained reader. Expressive reading is the best way to bring out the true beauty and meaning of a poem. A pupil will enter very quickly into the spirit of a piece of poetry or prose if it is first properly read to him. In fact, a young child can appreciate the true beauty of expression and the rhythm in poetry only by hearing the piece read aloud. In this way the ear is being trained as well as the eye.

(c) To make the literature lesson really attractive and valuable, three things are necessary:—

(i) The book must be suitable to the age and understanding of the pupil. Here it is advisable to caution the teacher against choosing selections that are too easy. It is preferable to choose matter rather above than below the pupil's understanding. It is not important that he should comprehend at first the full meaning of the piece so long as he catches the general drift and has some idea of the sense. He will gradually grow to a full appreciation of it and there will then be more mental stimulus.

(ii) The aim must be purely literary. Grammar and the composition of the language should not, as a rule, be taught from the reading matter. Nothing so soon kills the pupil's interest. The vocabulary will be extended and some grammatical knowledge acquired, but this should be quite a secondary consideration. The aim should be to create a taste for good and beautiful literature. In doing this, the teacher will naturally direct attention towards the aim of the poet and the means by which he accomplishes it. He will gradually lead his pupils to see and appreciate the style, rhythm and metre; to look out for and see the force and beauty of similes, metaphors and epithets; and to note such devices as alliteration, play upon words, onomatopœia, &c., where the "sound becomes an echo of the sense." He will gradually lead him to quote and compare, and will, of course, direct his attention to such portions as are worth learning by heart.

(iii) Lastly, the teacher must himself be a really enthusiastic literary student.

II.—In teaching composition the first point to bear in mind is the question of material. There are two main sources:—

(a) *Books*.—Reading stores the mind with knowledge and gives an enlarged vocabulary. The literature lessons, therefore, will be relied upon to a very large extent for providing material, ideas and vocabulary for the composition.

(b) *Conversation*.—This gives the pupil facility in expressing himself and shows him the extent of his own knowledge. A teacher can often spend a lesson profitably in discussing subjects with the class. Great stress should be laid on fluency of speech as a preliminary to fluency in writing. The pupil should gradually become accustomed to

answer orally in well-chosen language and in sentences increasing in length as he becomes more expert in expressing his thoughts; then, and then only, should he be allowed to commit his words to writing.

When discussing the subject-matter, information should be given as to where and how material may be obtained; the subject should be carefully analysed and the arrangement of the material planned out; and clearness, brevity and simplicity should be insisted upon, especially during the first, second and third years.

SYLLABUS.

FIRST YEAR.

Average Age: 12 years.

Reading: Simple but good literature—historical novels and poems mainly.

Prose such as Lamb's "Tales"; Kingsley's "Heroes"; Scott's "Ivanhoe." Voyages and travels. Hakluyt "Drake."

Poetry—Sea poems such as "Southey's "Inchcape Rock"; Campbell's "Mariners of England" and "Battle of the Baltic"; Macaulay's "Spanish Armada"; Tennyson's "Revenge"; Massey's "Sir Richard Grenville"; Cowper's "Loss of the Royal George"; Kingsley's "Three Fishers."

Patriotic poetry such as Browning's "How they brought the Good News"; Campbell's "Soldier's Dream," "Burial of Sir John Moore," "Men of England"; Shakespeare's "Henry V. before Harfleur," "Henry V. before Agincourt"; Tennyson's "Charge of the Light Brigade," "Defence of Lucknow," "Ode to the Death of the Duke of Wellington"; Cowper's "Boadicea"; Byron's "Waterloo"; Coleridge's "Ancient Mariner"; Macaulay's "Lays of Ancient Rome."

Composition: Easy descriptive and narrative essays; simple letters—(i.) private (including letters to friends and relatives, and simple relation of events); (ii.) the simplest form of business correspondence (including applications for appointments and answers to the same, references and enquiries); details as to addressing and posting letters.

Simple paraphrasing: Prose extracts at first, then simple poems or short passages.

General parsing and analysis: To obtain grammatical accuracy and logical grammatical reasoning.

SECOND YEAR.

Average Age: 13 years.

Reading: Prose—Addison's "Sir Roger" Essays from the *Spectator*; Scott's "Talisman," "Legend of Montrose," and "Quentin Durward"; Defoe's "Journal of the Plague"; White's "History of Selborne"; Prescott's "Mexico and Peru" (selections from); Southey's "Life of Nelson"; Voyages and Travels.

Poetry—Narrative poetry such as Scott's "Marmion," "Lay of the Last Minstrel," "Lady of the Lake." Byron's "Childe Harold" (Cantos I. and II.), "Lake Leman," and other shorter pieces; Tennyson's "Idylls of the King"; Longfellow's "Evangeline," and "Hiawatha"; Arnold's "Sobrab and Rustum." Dramatic poetry—Shakespeare's "Midsummer Night's Dream," "The Tempest"; and some of the simpler poems from the "Golden Treasury."

Composition: More difficult subjects for essay writing—chiefly descriptive and biographical. Occasionally write out the substance of extract read, e.g., one of the *Spectator* essays. General correspondence—occasional exercises only.

Paraphrasing: More difficult and involved matter—principally poetry and taken from the subjects read, generally whole poems rather than short isolated passages.

General Analysis: Mainly the relation of subordinate clauses and classification of phrases according to their function in the sentence.

The training in the first and second years is concerned mainly with accurate expression. The pupils are to be taught to talk distinctly, correctly and fluently, and to write legibly, in good English, and with good sense. Hence the following points require attention:—

Reading.—The material should be simple and copious and such as would require few explanations or notes. Literature of romance and adventure should be chosen so far as possible, as being better suited to the age of the pupils and likely to rivet their attention. If possible, a whole piece, poem, or episode, should be read through at one sitting. The teacher should remember that the young pupil lacks principally ideas and words; hence he should read copiously.

After reading the poem the pupil should be able to give orally such general ideas as the sense of the passage, the purpose of the author in writing it, the lesson it appears to teach. Such explanations as are required to make the piece intelligible should be given, but detailed explanations of words and phrases and meanings of archaic expressions should be avoided as much as possible. The teacher should insist upon the answers being given fully and in good English. The pupil's thoughts will be thus concentrated and guided in working out the subject-matter for the essay which will follow, and the attention will be fixed upon the salient points in a narrative, and so the pupil be taught to distinguish between essentials and non-essentials.

Written Exercises.—These exercises at first should be on topics well known to the student. The training in thinking out abstract subjects can well be left at present and all attention be given to the method of putting into writing the thoughts which are ready. The point at this stage is to encourage the student to write and to write freely—to find expression for his thoughts. He might be given such subjects as: the description of the room in which he is sitting; the description of the materials he is using; of the furniture of the room, or of his own home; of a picture on the wall of the room; a description of what he sees on his way to school, or of some scene in the streets. Such exercises as these will not only allow the pupil to give his full attention to what he is writing, but will teach him accurate observation, and that in the end will lead to accurate and logical thinking, which, again, will lead to accurate expression.

In the second year it is often useful to read over to the student an essay and ask him to reproduce it—first orally, then on paper. This can be done either paragraph by paragraph, or by obtaining the general sense of the whole piece and then dividing into paragraphs.

The *paraphrasing* in these years should be mainly oral and should consist of splitting up the selected piece into its component parts and expressing the sense of each part in as few words as possible. It

should in any case be the reproduction of any piece of prose or poem just read.

Grammar.—In the analysis the chief point is to obtain a notion of the structure of a sentence and the logical relation of its parts. The teaching of grammar should be quite incidental and should not encroach upon the reading exercises. The use of stops, such as the comma, colon, semicolon, and full-stop, should be taught here.

THIRD YEAR.

Average Age: 14 years.

Reading: Definite authors should now be studied. Prose—Addison's *Spectator* Essays; Macaulay's "Biographies" and "Shorter Essays"; Scott's "Kenilworth," "Waverley," or "Old Mortality."

Poetry—Tennyson's "Princess"; Milton's Shorter Poems and "Comus"; Wordsworth's Simple Poems, with selections from the "Excursion"; Gray's "Elegy," and "Eton College"; Goldsmith's "Traveller" and "Deserted Village"; Shakespeare's "As you Like It," "The Merchant of Venice"; lyrical poems from Palgrave's "Golden Treasury."

Some simple lessons in prosody should be given here—lessons on the difference between prose and poetry, on metre, on poetic form, and on lyrical poetry in particular.

Composition: Descriptive and reflective essays; essays on the reading matter and on the lives and writings of authors; reproduce essays read; give short abstracts of essays.

Paraphrasing of both prose and poetry.

Grammar: Only such as may be usefully brought in during the reading lesson, and when correcting essays.

FOURTH YEAR.

Average Age: 15 years.

Reading: A detailed period of English literature, e.g., the Age of Elizabeth, the Age of Anne, the Age of the French Revolution, the Age of Wordsworth, the Victorian Age.

Special prose: "Essays of Elia"; Hazlitt's "Characters of Shakespeare's Plays" and "Spirit of the Age"; Macaulay's Historical Essays.

Special poetry: Shakespeare's "Henry V.," "Julius Cæsar" and "Macbeth"; lessons on poetic form and the value of poetry; epic poetry; dramatic poetry; blank verse; selections from Milton, Shakespeare and Tennyson.

Composition: Reflective essays, literary and general topics, criticism of reading matter, and critical appreciation of authors.

Paraphrasing and précis-writing.

Critical appreciation should now be developed. As in the first and second years the interest mainly centred round the subject-matter, so now the interest should be more especially directed to the form and the authorship. Pupils should be taught to realise the beauty of the lines, to notice the way in which the various thoughts are expressed, to understand why that particular way is used, and to appreciate the general idea underlying the whole composition. They should gradually acquire, through examples, a knowledge of literary form, and be taught to understand why a particular form is used for a particular purpose. They should gradually be led to study the aim and purpose of the author and the ways and means he used to effect his purpose.

In studying an "age" or period of English literature the teacher should endeavour to give some picture of the life, manners and customs of

the time, so as to make the pupils realise the atmosphere in which the writer lived, the routine of his life, his methods and aims, and how they were moulded and influenced by his surroundings.

A knowledge of the simple laws of prosody is essential to an intelligent appreciation of poetry, and the pupils are now quite sufficiently advanced to understand metre and poetic form and the laws that govern them. After such lessons it would be a good exercise to write down the metre and rhyme schemes of the poems read. The pupils should be able to distinguish the leading characteristics of different poetic forms—sonnets, blank verse, dramatic poetry, &c. Many of these laws and characteristics they will find out for themselves if put in the way of doing so.

Composition.—The unity of the essay should now be studied. The important points to consider are relevancy, proportion and arrangement. Irrelevant matter must be excluded. Proportion must not be neglected, but each paragraph must have its own theme and not go beyond it. The several paragraphs must follow each other in a rational order, and in such order that the interest may be sustained.

Sincerity and confidence should be cultivated: sincerity in saying what is meant and meaning what is said; using only such words as are easily understood; avoiding fine writing and grand words, exaggeration and affectation. Confidence implies mastery of the subject, and then a determination to say what there is to say in the fewest and clearest words possible. The pupil's thoughts will then flow easily and he will find ready expression in words.

In the third year lessons might be given on some of the more common figures of speech with plenty of examples of their use. This might be continued in the fourth year, and in both years illustrations will be looked for in the reading lesson.

In the fourth year the question of style will be discussed and examples of different styles taken and commented upon.

In *Précis-writing* there should first be plenty of practice in oral *précis*, e.g., an extract or letter might be read at home and an abstract of it given orally in class; some scene from a play or a novel might be dealt with in the same way, or the *résumé* of a lesson might be given. In time a pupil should be expected to give orally an abstract that would take three or four minutes.

ADVANCED CLASS—FIFTH YEAR.

Average Age: 16 years.

Reading: Prose specimens of Bacon, Goldsmith, Johnson, Lamb, Macaulay, Carlyle, and Ruskin. Study one or two great modern authors, e.g., Carlyle, Tennyson, Dickens, Ruskin, Browning. Read particularly Ruskin's "Sesame and Lilies," Carlyle's "Hero as Poet" and "Hero as Man of Letters," Burke's "Speeches," Wordsworth's "Excursion," Tennyson's "In Memoriam." Study English literature in its historical aspect.

Composition: General essay-writing—expository and argumentative; literary criticism; prose writing—the essay and the beginning of journalism.

Précis-writing as applied to journalism.

In this, as in the fourth year, attention should be given to the literary and artistic qualities of the works selected. The sense of style must be fully developed. To do this use works in similar form by writers of different periods, *e.g.*, Bacon, Addison and Lamb for essays; Milton, Gray and Tennyson for elegies; Gibbon and Macaulay for historical prose, and so on.

The study of figures of speech and other artificial aids to style will now be more fully developed, and illustrations looked for.

Composition should include literary topics, synopses of works, comparative study of styles and periods, lives of authors, and perhaps an attempt at verse composition.

THE PUPIL AS AN ILLUSTRATOR.

By CLOUDESLEY BRERETON, M.A.

THROUGH the kindness of one of the Sisters teaching in an Irish Convent School I have just seen an interesting and not unamusing collection, or rather album, of pictures and picture post-cards put together by a former pupil to illustrate the journey of Phineas Fogg in "Round the World in Eighty Days," which was the book selected for study by the class in French. The arrangement is simple and effective. The illustration is on one page while on the opposite one is written an explanation drawn from the text and couched in the pupil's own French. At times the distant scenes to be illustrated do not appear to have fallen under the camera of the picture post-card photographer, or at any rate it has proved beyond the power of the would-be illustrator to obtain reproductions either in the shape of views or woodcuts. Her ingenuity, however, has not failed her and pictures of places nearer home have been inserted on the ground, at times somewhat slight, that the picture in question has a more or less distinct resemblance to the missing view. Sometimes the substitution seems to be quite serious, as in the case of St. Mark's, Venice, which does duty for a Malabar Pagoda; in other instances traces of humour are clearly evident.

This practice, I am well aware is not unknown in peep-show circles, in which the passage of the Tugela at one year's fair becomes the crossing of the Yalu at the next. Personally I have no great objection to these intentional substitutions. They all belong to the great realm of "make believe" in which the imagination of the child realises itself and tries to realise its surroundings. If, as M. About has sagely said, the truest stories are those which have never occurred, many of these pictures are to their compilers truer than actual views of the actual places. Those who object to this practice, should in strict logic forbid all playing at "make believe" in their own children, laying a special embargo on the coal-scuttle being treated as an enchanted castle, to use the well-known Stevensonian example. Besides, is not

imagination the art of cross-referencing, of matching likenesses, and what are these substitutions if not attempts at matching likenesses? Nor have I any objection to the comic cuts which were neatly interspersed among the real and imaginary illustrations. Why should the authors of "Wisdom while you Wait," have a monopoly in methods of treatment which were once free and open to those who carved the gargoyles of our ancient cathedrals. Here seems to me a legitimate outlet for the *graffiti* instinct so strong in the young, which makes them sketch and scribble whenever they get the chance. Such an instinct cannot be altogether innate depravity, as was formerly considered, and here is a chance of giving it play while rendering it harmless. I would add that the author or compiler of this interesting album was, according to her teacher, a girl who had hitherto taken only a minor interest in her work, but once she started on the book her whole attitude towards the subject changed. She had learnt the secret of making it her own.

Examinations have a sad tendency to make teachers encourage children to bolt their formulæ whole, with the view of reproducing them in their entirety on a subsequent occasion. Knowledge administered in such impervious capsules is about as nutritive as a diet of cherry stones. What we really want to increase in the child is the power to assimilate and reproduce knowledge, not as a foreign substance, but as his own. This reproduction itself is mainly valuable, not for the intrinsic value of the results, but as evidence of the proper functioning of the child's mind, of his growing control over the world without him. Anything that tends to increase the personal element in the control is precious because it assists the growth of individuality. Hence if we can enable the child to look at anything with his own eyes, and formulate his view, his conception, his version of it, the gain is great. He who looks with his teacher's eyes does not look at all, for faith is by definition blind.

Now that we are in the middle of a frightfully over-done picture post-card craze, it would seem we might well draw a little good out of evil, by encouraging the child to form for himself out of these chaotic heaps of indiscriminate pictures a collection which really centres round and embodies a definite idea. One does not want to encourage the extensive "grangerising" of books, though a good deal of the literature of to-day is so ephemeric, there is little harm in cutting it up. But one sees no reason why the pupils in any class should not be encouraged to form albums illustrating the places and incidents mentioned in their modern language reader by picture post-cards, woodcuts, or even their own unaided artistic efforts. An *enseignement par l'image* is really an education of the imagination, although the picture poster, after having been rammed down our throats as the Alpha and Omega of modern language teaching by people whose minds were only philosophic enough to take in one idea at the time, has now fallen from its high

estate and in many cases the famous pictures of the four seasons have been unjustly relegated to the cupboard. I admit there was about the colouring of some a certain liverish-tint, that in the long run affected the eye with a sort of visual jaundice. In the making of the suggested albums there will be no danger of mental biliousness. In place of monotony there will be endless variety and each child will be his own "*marchand des quatre saisons*."

Of course, the compilation of such albums would be entirely voluntary. There might, however, be a regular exhibition of them at the end of the term, or school year, with a small prize offered for the best, which would not necessarily be the biggest. The points to consider would be the appositeness of the illustrations, the taste shown in arrangement, the correctness of the French. The wise teacher, however, will not run the competitive idea to death. He will remember the object is not to produce *illustrations but illustrators*, because in attempting to illustrate the story, the boy really enlightens himself. The teacher's aim will rather be to encourage everyone to form one of these scientific scrap-books for his own pleasure and delectation. If he can only touch the spring of initiative which lurks in the biggest duffer, by showing him that the thing is possible, he may find that the idea appeals to the duller, even more than to the cleverer pupil, just because it is one of the few things that the dull boy finds is within his power to do.

There is no reason why the making of such pictorial commentaries should be confined to the modern language reader. It might be well extended to the English play or story the class were reading, and certainly as far as topography goes, to the period of history under study, though of course the need in this case for historical accuracy would not allow of the same free treatment of illustration.

GEOGRAPHY IN SECONDARY SCHOOLS.

REGULATIONS OF THE BOARD OF EDUCATION.

By Prof. L. W. LYDE, M.A.

Professor of Economic Geography, University College, London.

III.

BY the terms of the Editors' request for "views on any points in the Regulations which have not been taken up by the two contributors to the November number" of THE SCHOOL WORLD, I am precluded from touching on some of the most interesting parts of the Regulations; and, as the purely geographical side of the question cannot be even attempted in a single article, I should like simply to direct attention to the light which the Regulations throw on the present constitution and policy of the Board.

It is significant that in education, as in economics, real experts have till lately—with one

or two notable exceptions—been absent from official bodies, and their opinions have had little weight hitherto with the public. Consequently, especially in school education, and more particularly in schools in industrial districts, we have suffered from that most fatal of all forms of conceit—the successful business man's "common-sense": he made his "brass" by sticking to his own business, and doing one thing at a time and doing it thoroughly. This is his Shibboleth; and, as parent and as local authority, he will take care that everyone else shall copy his illustrious example, and believe that, by tacking on the word "commercial" to a subject and teaching it wrongly, you can aid the commercial development of the borough or attract pupils—both being "good business." Curiously enough, things are better in this respect in more rural districts, where the agricultural interest is already familiar with its own "rotation of crops."

In the more densely populated areas, therefore, the true end of teaching has often been hidden, and a false end has been artificially glorified, generally with great expense to the ratepayers in the provision of elaborate mechanical apparatus, profoundly unsuited to class-teaching. For machinery, as Mr. Hobson says, "can only teach what it practises"; and a dead level of repetition is the lesson of the machine, it knows nothing of progress or spontaneity, it is the best possible assistant of the premature specialist.

It is from this point of view that I look upon the new regulations as being of such importance. Good as the regulations for literature were, they dealt with a subject into which it was more or less impossible to introduce all kinds of mechanical arrangements and apparatus; there is no counterpart in the literature hour to *commercial* geography. But in dealing with a science we are on quite different ground. The experts here are not, as those in literature, idealists; and yet the Board has thrown its weight on the side of the ideal. This means that education, even scientific education, is not recognised as a means to material good or special knowledge, but as concerning itself first and always with the production of Plato's "best possible man." And one service that the Board is doing to education in taking this attitude is that it emphasises the truth that the kind of education necessary to produce the "best possible man" in any race is such as approximates to the genius of that race. Hope on her mountain-top may look out undismayed on the problems of the future for our race, so long as the Powers that Be stand between the genius of the race and attempts to impose on it foreign fetters.

I do not wish to raise here any question of "subject" as against "class" teaching, for that is not involved, and my sympathies are all on the side of the former. But few things could be more disastrous for our secondary schools nowadays than such specialisation of *personnel* or of curriculum as would make it impossible to have a staff of real teachers or a well-balanced time-table. The danger was that in the widened field a

narrower method might be used; but the Board is not going to be a party to any such misuse of the opportunity.

It recognises that geography, like history and literature, is often taught by teachers who have no special knowledge of the subject; and, instead of clamouring for specialists, it makes the best of the existing material. These teachers are honest men and women who certainly do their best; and many of them are enthusiastic teachers, who teach well.

That is what the Board wants, and what the country needs—good teachers, not good geographers or historians. The good teacher knows in the first place what can, and what cannot, be done with a class; he does not waste time on fads; he correlates his work properly; and, in the absence of special knowledge, *e.g.*, of history or geography, all he needs to make him a good teacher of the subject is exactly such guidance as the Board gives in these regulations. The implicit recognition by the Board of the good work done by the average teacher—who, of course, does not teach, and has not taught for many a long day, lists of capes and bays, any more than the average examiner sets, or has set, questions on them—is full of encouragement; and it will certainly commend itself to heads of schools. After all, school is school, not an institute of history or geography; and the value of good teachers is not affected by their ability or inability to give explanations of their own of erratic phenomena in history or geography.

It is, perhaps, unnecessary to emphasise these points; but I do so because I have met no practical teacher who had anything but a cordial welcome for these new regulations. One man said: "I take myself to be an 'average teacher'; I understand 90 per cent. of my class, and 99 per cent. of them understand me; and, with decent preparation of my lessons and such guidance as is given in this, both as to general lines and as to particular method, I think I can do my duty by the boys in geography, and could in any ordinary school subject, though my best friend or worst enemy couldn't call me a specialist."

The man in question is an excellent class-teacher, and I believe that his attitude to the regulations is that of the vast majority of good class-teachers. My own experience of geography specialists in class may have been unfortunate; but I have seen only one—a woman—who approached being a good class-teacher, or who had even any idea whether a class was really attending or not.

If you think that the thing learned is more important than the way in which it is learned, there is no more to be said; but that is evidently not the view of the Board. It puts the mere acquisition of knowledge in its right place—the background, and emphasises the supreme importance of such knowledge as is acquired being widely distributed, and being acquired in the right way. There is even, in the preliminary instructions, almost a suggestion that the best possible teacher should teach the youngest classes, where

a really good teacher may be as an angel from Heaven to the little struggling brain, so impressionable and so insistent with its "Why? Why? Why?"

Further, special provision is made for the continuance in the older classes of the method naturally employed in answering the "Why" and the "How" of the little people. That is to say, the object in view is not knowledge, but power—the power to observe, analyse, infer, verify, organise. The only specialist who has any firm place in such a scheme is the specialist in *teaching*. The Board makes no suggestion that there is any "royal road" to this power either for teachers or for taught, least of all *via* premature specialisation.

THE GOLDSMITHS' TRAINING COLLEGE.

THE institution to be known in future as "University of London, Goldsmiths' College," was originally a Royal Naval School. In 1888, when the Naval School was removed to Eltham, the place was acquired by the Goldsmiths' Company, and for sixteen years was maintained by the Company as a technical and recreative institute. In June, 1904, the Senate of the University of London accepted the buildings as a present to the University, the gift including an unoccupied site of about $4\frac{1}{2}$ acres, and an endowment of £5,000 a year for the five years 1905-1910. The College was opened on September 28th by Lord Rosebery.

In the session 1904-5, for the expenses of which an additional grant of £5,000 was made by the Company, no substantial change was made in the organisation and work of the old Institute, but in the present session certain evening classes, chiefly of a commercial and elementary nature, have been discontinued, and a Day Training Department for elementary teachers has been opened. The work of the College now includes evening classes in science, up to the standard of the B.Sc. degree; evening classes in engineering; evening classes in connection with certain building trades; an art school (day and evening); and the aforesaid Training Department. Numerically this department is at present the most conspicuous feature of the College. Readers of THE SCHOOL WORLD may be interested in a brief account of what the Goldsmiths' College hopes to accomplish in the way of training teachers.

The training department is subsidised by the County Councils of London, Kent, Middlesex, and Surrey, and by the County Borough of Croydon. The pressing need of the county educational authorities is that of a large number of duly equipped teachers for the elementary schools; and accordingly it is provided that, for the present at least, the course shall be uniformly of two years' duration, and that the corresponding examination shall not be one that constitutes a stage in the course for a degree.

The buildings are exceptionally well suited to the purpose of giving intending teachers a thorough and all-round training for their profession. The "Great Hall," capable of seating 1,800 persons, and containing a good organ, will be invaluable for cultivating the social side of college life. There are also a well-equipped gymnasium, a large swimming bath, a library, an art room, men's and women's common rooms, workshops, asphalt courts for tennis, and a field (the unoccupied site mentioned above) for hockey, football and cricket. Arrangements have also been made whereby other ground in the neighbourhood is available for hockey and Rugby football.

The Warden of the College, Mr. W. Loring, M.A., Fellow of King's College, Cambridge, acts as principal of the Training Department. The vice-principals, Mr. T. Raymont, M.A. and Miss C. Graveson, B.A., have both had ample experience in the working of University Day Training Colleges at Cardiff and Liverpool respectively. The staff of lecturers has wisely been chosen so as to combine a great variety of experience and training. Mr. A. Lapworth, D.Sc.(Lond.), was a member of the staff of the Goldsmiths' Institute; Mr. Ivor B. John, M.A. (Fellow of Univ. of Wales), comes from Cardiff University College; Mr. D. L. Savory, B.A. (Oxon.), from Marlborough College; Mr. J. F. Unstead, B.A.(Camb.), from a London elementary school; Mr. J. Kay, B.Sc.(Lond.), from a Lancashire secondary school; Mr. E. Fitzgerald, B.Sc.(Lond.), from Kingswood School, Bath; Miss E. H. Spalding (Somerville Coll.) from Stockwell Training College; Miss F. H. Birley (Queen's College, Chester) from Winchester High School; Miss F. Strudwick (Newnham Coll.) from Westfield College; Miss E. Hildersley from Stockwell Training College; Miss N. Catty, M.A. (Bedford Coll.), from Stepney Pupil-Teacher Centre; Miss E. Greene (Newnham Coll.) from Norwich High School; Miss J. Laidler, M.A.(Vict.), from Pendleton High School; Miss M. Carter, L.R.A.M., from the Skinners' Company's Schools, Stamford Hill; and Miss C. A. Kemp from the Battersea Polytechnic. Next year, when the full number of students will have been admitted, the staff will be increased to about thirty.

The Goldsmiths' Training College possesses one feature which is at least remarkable—it is by far the largest college of its kind in this country. No other training college has at present more than about 200 students, whereas here there are to be 500. The recognition by the Board of Education of a training institution for so large a number is, of course, regarded as an experiment, though it is an experiment which takes place under such very favourable conditions that it can hardly fail. The obvious advantages of a large college are that corporate life tends to become vigorous, and that the students come in turn under the influence of the several members of a very large staff. There is evidently a danger, on the other hand, that some

of the work, especially perhaps on the practical side, may become too little individualised. But the staff is so large that this becomes chiefly a question of skilful organisation; and the experienced persons who will direct the practical training of the students may be assumed to have their eyes open to the danger here hinted at.

The Kent and Surrey County Councils are taking active measures towards the establishment of hostels for those students who cannot live at home—a provision which is obviously necessary to the efficiency of a day college. At present, the students reside in duly registered and supervised lodgings, and a mid-day meal, at which all the students are present, is provided in the College dining hall.

The curriculum includes English language and literature, history, geography, a modern foreign language, mathematics, elementary science (including nature study), physical exercises, domestic subjects (for women), manual instruction (for men), drawing, music and voice-production, and the principles and practice of teaching. Scripture is also included, but is voluntary both for staff and for students. The general principle upon which the course of work is arranged is that the professional training is postponed till the second year, the first year being devoted to general education. Certain general subjects, however, notably English literature and French, will for special reasons be continued in the second year.

Great efforts are being put forth to make the course of study as broad and liberal as is possible under the limitations at present laid down. But, as was made abundantly clear by the Vice-Chancellor in his speech at the opening ceremony, the intentions of the University Senate are by no means incompatible with a subsequent broadening of the curriculum, such as would enable promising students to pursue courses of study leading up to university degrees. It may also be pointed out that, whether as regards the equipment of the College, the proximity of suitable schools for practice, or the qualifications of the staff, the circumstances are eminently favourable for the addition of a department for the training of secondary teachers.

William Allen. By David Salmon. 23 pp. (Swansea: E. and J. Griffiths.) 6d.—This pamphlet is a reprint from the *Educational Record*. It is one of those historical enquiries of Principal Salmon which we have learned to welcome. Principal Salmon spares no pains in thoroughly bringing together his material, in arranging it concisely, and giving to the educational public a readable *résumé*. He tells us the story of William Allen, a man who spent his life in reforms, self-demands in the service of God and man. His energies were manifold. He was a man of high culture, yet his conscience accused him sometimes of "over-indulging his love of learning." He was treasurer of the British and Foreign School Society, connected with Owen's educational experiment at New Lanark, and a determined advocate of the abolition of slavery. Principal Salmon has done well in bringing his name to attention. The pamphlet is adorned with two portraits of Allen and a picture of his house in Plough Court, Lombard Street.

GREAT EDUCATORS.¹

PROF. J. W. ADAMSON has roamed in a wide field. He has discussed the use of the philosophy of Bacon and the spirit of modern science. Bacon's method is described, and its relations to modern scientific methods pointed out. Next is an account of the school-room in the early seventeenth century. Here Prof. Adamson naturally avails himself of John Brinsley's *Ludus literarius*. This leads on to Ratke and to the relation between Bacon and Comenius. A chapter is devoted to the great Didactic. We then are taken to English educational movements, and Mr. Adamson treads on less-beaten tracts. He deals with the new pedagogy in London and with the Long Parliament, connecting with it the name of Samuel Hartlib and his projects; Kinner and Petty deservedly emerge from their obscurity and repay the attention of the author and his reader. A whole chapter is given to John Dury's reformed school, and to such effect that one wonders whether the time is not approaching when Dury will be held to be worthy of a volume to himself.

Charles Hoole then claims the share of a chapter. We then come to Sir Balthazar Gerbier and projects of academics. Having now devoted about three-quarters of his book to secondary education, Prof. Adamson proceeds to deal with the elementary education of the period. He treats of the education of the English poor and the movement of the Society for Promoting Christian Knowledge. This is followed by an account of French elementary education, with which the name of St. Jean-Baptiste de la Salle is joined. Then we have German elementary education and the establishment of the Pietest schools of A. H. Francke. Prof. Adamson ends his book with the approval of the French *Plan d'Etudes* of 1902 as a *via media* between "the too great comprehensiveness of the courses suggested by the seventeenth century innovators and the narrowness and inelasticity of the curriculum against which they contended."

The main thread of the volume, therefore, is the evolution of the modern curriculum, in so far as the seventeenth century throws light on the subject. Such a theme requires a treatment of both theory and practice of the times. On the whole, Prof. Adamson seems rather to emphasise the history of the theory than the history of the practice. He would seem to hold the feasible view that coming events (in practice) have their shadows thrown in front (by theory). This proposition particularly holds, curiously enough, whilst we consider secondary education. When we turn to elementary education, we go at once from paper syllabuses to schools, charity schools, schools of the Brethren of the Christian schools, the Pietist schools. We find, too, that the Baconian philosophy, which served excellently for the secondary school theorists of the first part of the seventeenth century, is, we will not say out-

grown, but has become irrelevant for the elementary schools at the close of that century. The fact is, that there is a distinct line of cleavage between the history of secondary and elementary education in England, perhaps more than in foreign countries. The ideas of the innovators are founded, it is true, on philosophy. The ideas of the founders of elementary schools are based on philanthropy. However Prof. Adamson tries to make his theme continuous, the thought of the reader breaks in and regards the treatment of the history of secondary schools as Part I. of his work, and Chapters XI. to XIV. on elementary education as Part II.

With regard to the chapters on Bacon, Ratke, Comenius, Hartlib, Dury, Hoole and the Academics, it should be said at once they give us now the most readily accessible general account of this most interesting period of educational history in England. Prof. Adamson tells us that he has arrived at a wider survey than a purely English one. It is easy to suggest that it would have been valuable to have had accounts of such men as J. H. Alsted, Andreas Andrear and Campanella, who are almost unknown to the English reader, but who were remarkable thinkers, and affected both Comenius himself, and also his English contemporaries.

This leads us the more readily to acknowledge gratefully Prof. Adamson's treatment of the school system founded by St. Jean-Baptiste de la Salle and by A. H. Francke. As Prof. Adamson points out, the elementary education movements in England and abroad are traceable to other causes than philosophical and theoretical sources, but they have this much in common, they are both parts of the wide field of the educational historian. Prof. Adamson's sketch of the history of elementary education in England and the historical factors which led to its possibility of realisation is interesting and valuable. What he says of the charity schools is sound and needs to be said. But, of course, the real impetus to general English elementary education, as we understand it, came after the seventeenth century, viz., from the mechanical and industrial revolution from 1760-1830, when the introduction of steam caused the springing up of great factories and large towns, and the country required training and discipline of the crowds of children who were required for industrial purposes, for they drew upon themselves the compassion of those who were interested in the social and spiritual progress of the nation. National elementary education then, and then for the first time, became a generally recognised necessity, and had to be embodied in the national system. The curriculum of these schools was forced upon them merely to save them from absolute intellectual starvation. The introduction of theoretical considerations into their curriculum has only just begun, consequently the influence of the curriculum on that of the secondary schools is enormously greater now than could be the case in the seventeenth century.

Prof. Adamson's book is, undoubtedly, of high

¹ "Pioneers of Modern Education," 1600-1700. By John William Adamson. 285 pp. (Cambridge University Press.) 4s. 6d. net.

value. He has gone to a historical subject in the historical spirit. His book embodies independent research. It makes for the disclosure of educational principles, by presenting adequate material for their study. It gives a wider point of view than is usually found in the text-books. There is a restraint on the worship of heroes. There is a real attempt to get at perspective. Evidence that is offered is first-hand.

In addition to these high qualities in the text, it should be added that there is a good index, a very useful table of educational dates from 1599 to 1712, and a list of publications referred to in the text.

HIGHER EDUCATION IN NEWCASTLE-ON-TYNE.¹

IT is one of the services of the Education Act of 1902, that it has brought the education authorities to enquire into the present provision (and lack of provision) for secondary education. This need has brought into requisition and developed the remarkable insight of Prof. Sadler into the practical possibilities of education in various parts of England under present conditions. Prof. Sadler is *facile princeps* the consulting educationist of the education authorities. He is, as it were, the Melanchthon of our time, the Præceptor Angliæ.

The recommendations of Prof. Sadler for Newcastle are of more than merely local importance. The question of higher elementary schools is urgent in only too many districts. Such schools, in Prof. Sadler's view, should be neither narrowly utilitarian, nor schools attempting preparation for literary and professional callings. The higher elementary school education will ordinarily end at fifteen years of age, and it should therefore be "humane," and so divided and carried out that parts of it, if the expression is permissible, will hook on to the practical activities of life.

In a large town like Newcastle there is need for middle secondary schools where the maintenance cost must be about £15 per head in the boys' schools and £13 per head in the girls' schools. These schools should offer a thoroughly sound education at a fee within the reach of parents of modest means. Such a fee, Prof. Sadler suggests, might be £5 or £6 per year. For the higher secondary schools for boys and girls, the maintenance cost will necessarily be £20 a year or more. Here, Prof. Sadler suggests, the fee should be £15 per head. Private schools, when efficient, should be recognised and allowed to send in candidates for city schools, and, in certain cases, scholarships might be held in those which are adequate. Efficient private schools, too, should be helped by the loan of literary books and apparatus belonging to the education authority, under certain

conditions. Provision has also to be made for the training of pupil teachers, and the training college and "certificate" classes should be helped. A penny rate is recommended for the Armstrong College. Other institutions to be supported are the evening classes, the School of Domestic Economy, and an industrial museum.

Consultation committees are recommended:—

(i) For the different grades of teachers to bring about correlation of classes of study.

(ii) Of centres of technological teaching, to effect combination of effort.

(iii) The publication of an education directory.

These recommendations are supplemented by a financial estimate, by which it is seen that the necessary funds would be provided by a twopenny rate, which in Newcastle would produce £17,239.

Speaking broadly, the educational principles embodied in the report insist on a close study of each type of educational work, so as to estimate accurately its cost before entering upon it, and the determination to have each type properly equipped and established upon a basis for sound development. Rather begin warily at the outset, in the directing of multiplying educational institutions. First make thoroughly efficient those which are in the hands of the education authority. Everywhere, Prof. Sadler finds, the salaries of teachers need revision. For in the new educational era it is simply a question of success or failure, whether the right men and women are attracted to teaching. Then there comes the necessity for adequate equipment and apparatus. The reason why Prof. Sadler's reports are so bracing is because he recognises the dignity of the teaching profession and the necessity of right conditions for its development.

A CONTRIBUTION TO SCHOOL HYGIENE.¹

By DR. A. MEARNS FRASER.

General Remarks.—Important as is the purely educational part of the duties that have devolved upon the sanitary authorities as administrators of the Education Act, they are secondary to the obligation to neglect nothing to protect or improve the health of children entrusted to their care. You, as members of the sanitary authority, are training a large proportion of the future inhabitants of this borough, and your first care must surely be that the coming generation shall be, not only healthy, but equipped with that knowledge of the elementary laws of health that shall enable them to preserve their bodies in a healthy condition after leaving school and entering upon the business of life. You will exhibit a poor appreciation of your duties, if the children of your large elementary schools, however highly educated they may become, acquire that education at the expense of anemia, rickets, defective eyesight, narrow chests and impaired physical development, to say nothing of such diseases as diphtheria, consumption, and whooping-cough.

There is an obligation on you that your schools should be

¹ "Report on Secondary and Higher Education in Newcastle-on-Tyne." By Michael E. Sadler. (Newcastle Education Committee, Northumberland Road.) 15.

¹ From a Report (1905) to the Health Committee of the Portsmouth Urban Sanitary Authority.

constructed strictly in accordance with the laws of health. It must be borne in mind that in dealing with children you are dealing with a material very susceptible to unhealthy environment; conditions which may be harmless to full-grown plants will often stunt and kill them when younger and not so fully matured. In considering the suggestions I make, therefore, I trust you will bear in mind this all-important point, the extreme readiness with which children react to external influences whether beneficial or otherwise, for it is these indeed which will largely decide whether the children will grow up into healthy or weakly members of the community.

Without going too much into detail, there are several broad principles which should be borne in mind in the erection of schools. Briefly these are as follows:—

Site.—The school should have a southern aspect, and sun should be able to gain access to all the rooms. No plan for a new school should be passed until it has first been carefully examined by the sanitary expert of the educational authority. It is a curious thing that buildings in which young growing children spend such a large part of their lives should, up to the present, have been erected without any sanitary expert being consulted. The result is that in many instances the whole value of the site has been stupidly sacrificed to give the school a fine front on to the main street, and that commonly the due observance of the laws of health has been quite secondary to the erection of a building with a handsome and attractive exterior.

Construction.—In the building rules of the Board of Education I see it stated that the most suitable plan for a large school is that of a central hall with class-rooms grouped about it. I cannot agree with this recommendation, and I think you will find in the latest best examples of school construction, such as the new Christ's Hospital School and the Britannia School, it has been abandoned, for the reason that with such a system it is very difficult to obtain proper cross-ventilation in the class-rooms. An illustration of the disadvantage of this system may be found without going very far afield; the Town Hall of this town is constructed with one large central hall surrounded by smaller rooms on lines somewhat similar to those recommended by the Board of Education, and it is unnecessary for me to point out how difficult of ventilation the committee rooms and police courts are, and how very stuffy and objectionable they become when occupied for a couple of hours.

Class-rooms.—Class-rooms should be so constructed as to allow of cross-ventilation in each room, and all the windows should be made capable of being easily opened half-way down. The lighting is most important, and the area of the windows should be not less than one-fifth the area of the floor space.

Size of Class-rooms.—This is one of the most difficult points to deal with—health and efficiency of education demand they should not accommodate more than forty children: financial reasons, however, often necessitate from sixty children and upwards being in the same room. We have two important factors therefore, health and money, pulling in diametrically opposite directions. I recognise the difficulty of your position as administrators of the rates, and do not therefore dogmatically take up the position that money should be sacrificed to health whenever the two clash. In a case of this sort the wisest method is to accept the best compromise available. As the extra expenditure which would be incurred by the larger number of teachers required for smaller classes is, I am afraid, an insurmountable obstacle, I suggest that you endeavour to modify the evil of large classes by giving each child, I do not say a large, but a sufficient amount of air space.

Air Space.—In the whole subject of school hygiene there is nothing approaching in importance the necessity of giving growing children plenty of air, and plenty of fresh air. Here,

again, I cannot agree with the recommendation of the Board of Education of 8 square feet of floor space and 80 cubic feet of air per child for old schools, and 10 square feet of floor space for new schools. It is true this is the minimum recommended, but in practice a minimum always becomes the maximum. I think there should never be less than 15 square feet of floor space per child; there was almost complete agreement on this limit at the recent Conference on School Hygiene; in some counties more than 15 feet are insisted upon.

Perhaps the insufficiency of this allowance will appeal to you more by a comparison with the minimum legal allowance in factories and workshops, the Section dealing with which reads as follows: "A factory or workshop shall be deemed to be overcrowded and *injurious to the health* of the persons employed therein if the number of cubic feet of space in any room therein bears to the number of persons employed at one time a proportion less than 250 cubic feet to any person" (Factory and Workshop Act, 1901, Sec. 3). Even in a common lodging house the legal limit is not below 300 cubic feet per person.

It is true these allowances are for adults, but with all submission I beg most emphatically to controvert the idea held by a large number of people that a child needs only half, or less than half, the air space of an adult. A child needs quite as much if not more than an adult. A child is a fast-growing organism, that is to say, far more rapid developmental changes are taking place in a child than in an adult, and to supply the great building up of nerve tissue, bone tissue, blood, &c., that is in process, it is essential that at least as liberal a supply of oxygen should be supplied as to a full-grown man whose physical development is more or less complete. Moreover, a child is a delicate organism, and therefore much more readily injuriously affected by adverse conditions than an adult; children will die from exposure to insanitary conditions which will only temporarily affect an adult. I much regret that the view that a child needs half the air space of an adult should be found in some text-books on hygiene. This idea of proportioning fresh air to bulk appears to me just about as sensible as to make a big fire to heat a roomful of adults and a small one for a roomful of children!

Air Space and Infectious Diseases.—The prevalence of infectious diseases also has an important bearing on this question of air space. Everyone who has anything to do with infectious diseases recognises that they are spread chiefly through the large elementary schools. Now some of these diseases, diphtheria, for instance, are very infectious at short ranges, and the closer children sit together, the more liable they obviously are to contract these diseases. It is overcrowding that I believe to be responsible for the enormous increase in diphtheria we have seen in recent years. Take again tuberculosis—this is essentially a disease of overcrowding. Fortunately it does not at present seem to attack children very much in the form of tuberculosis of the lungs or consumption, but they suffer largely from other forms of tuberculosis, such as tubercular glands, tubercular joints, tuberculosis of the skin and of the brain, and one child or teacher suffering from consumption can do a lot of harm by infecting others in a crowded school.

I could say much more on this subject, but I submit that for the present I have said enough to support my contention that the provision of ample air space is by far the most important subject in the whole range of school hygiene.

Ventilation.—Ventilation follows naturally on the subject of air space. It is insufficient for proper air space to be provided, unless provision is also made for a sufficient supply of fresh air. Even from an educational point of view purely this is important; unless a proper supply of fresh air is admitted, and means provided for removing the poisonous products of

respiration, the children become wearied and languid and unable to keep their attention on their teacher and lessons. An example of the drowsiness caused by bad ventilation may be seen in many churches, where, during the sermon a number of the congregation lapse into a sleepy condition if not into actual sleep. It is customary to attribute this languid condition to want of eloquence on the part of the preacher; I believe this is unfair and that it is far oftener due to a lack of oxygen.

Now ventilation is one of the most difficult subjects to deal with. No end of patents have been taken out for various systems of mechanical or artificial means of ventilation. I believe none of them is a success. The machinery seems to get out of order, and above all there is a continual expense for maintenance. From the study I have been so far able to give the matter, I believe some form of natural ventilation, possibly Boyle's system, is, in this country at any rate, the best and most economical.

Warming.—Warming may be of three kinds, by open grates, hot pipes, or hot air. Every room should have a properly constructed open fire-place, as this also assists ventilation, but, in addition, many large rooms will need other means, and of these I think possibly radiators are the best. They may, with advantage be placed under windows—if there is a small slit in the window the fresh air coming in will get warmed in passing. I do not care for the hot air system, to my mind "cooked air" always has a nasty and unhealthy flavour about it.

Warming, however, is too lengthy a subject for me to attempt to discuss it in detail in this report. I will merely content myself with the few remarks I have made, pointing out at the same time that it should be combined with the system of ventilation, although the latter must be capable of acting independently of the heating arrangements, which, of course, will not be used during half the year.

OXFORD LOCAL EXAMINATIONS, 1905.

HINTS FOR TEACHERS FROM THE EXAMINERS' REPORTS.

THE reports of the examiners in the case of all the examinations, preliminary, junior, and senior, are this year preceded by a special notice. In it the delegates direct the attention of candidates and of their teachers to several points which are noticed in the reports of many examiners:—

Candidates are warned against the very common fault of writing irrelevant answers. This fault is due partly to carelessness in reading the questions, partly also to the desire of candidates to drag in information which they have learned by heart.

Vague answers are useless.

The use of slang expressions ought to be carefully avoided.

When a question consists of several parts, candidates must not insert between their answers to the different parts the answer to any other of the questions in the paper. Unless the number of each question attempted by a candidate is written in the margin of the ruled paper at the beginning of the answer, no marks will be given for the answer.

The examiners in the various languages find that there is a widespread habit of learning by heart translations of passages from the prepared books. This practice, besides being educationally harmful, impairs the value of the examination as a real test of knowledge of the languages.

Teachers are warned that the use of unsuitable text-books is very injurious to the candidates' chances of success; for

example, when, as is apparently common, brief manuals, full of undigested facts, are given to the pupils to be read or even learnt by heart, with little or no oral teaching.

Teachers are also warned against giving their pupils answers to learn by heart.

PRELIMINARY.

In *elementary arithmetic* the following are the only points calling for remark: (i) Many candidates begin with the later problems, and so leave no time for the earlier questions in the paper. It is probably better to go straight through the questions, and candidates would benefit considerably by more accuracy in stating the results of their work. (ii) Not a few candidates so mixed up and confused their own notes and calculations with the working to be shown to the examiner that it has been a serious difficulty, in some cases, to discover what is given as an answer.

In *higher arithmetic* the work is extremely uneven. The gravest general defects are confusion between square and cubic measures, and unfamiliarity with the metric system. A simple question involving francs and centimes was worked very frequently in *vulgar fractions*.

The *English history* papers showed a tendency towards verbosity, even among those who best knew their subject.

Some candidates repeat phrases obviously learnt by heart, and sometimes such phrases are repeated in a totally wrong context.

The examiner in *composition* remarks that there were only a very few cases of flippancy, but some of the use of slang expressions which should be avoided in a composition exercise.

The question in the *English author* (Scott) paper requiring a statement of the differences between the Norman and Saxon dress and habits served, as a rule, to distinguish those who had a surface knowledge of the book from those who had made of it a careful study.

The weak point in the paper on Scott's poems was the paraphrasing, which usually showed that the general drift of the passage had not been grasped, while the poor quality of the composition suggested the need of more practice at such work.

In the *geography* paper the outline map of England was generally well drawn, though it was not so well filled in. The definitions showed in many cases a lack of clearness, and the courses of the rivers and boundaries of some countries were not at all accurately known.

The majority of candidates take the *Latin* paper without having had any real training in the easier forms of Latin sentence construction. The notes written on passages from the prepared book very often show that a correct translation has been arrived at merely by the aid of memory, the construction of the sentence being utterly misunderstood. The unprepared pieces were consequently not well done. In the grammar the irregular verbs were very poorly known. In the sentences to be translated into Latin most of the candidates were rather helpless, although the vocabulary and syntax were very easy.

Reporting on the *French* papers, the examiner says the sentences for translation from French into English were rarely well done, and showed a general lack of grammatical accuracy. The sentences from English into French were still less satisfactory, the weak points being the place and order of the personal pronouns, genders, and the agreement of adjectives with their nouns. There was great inaccuracy in the use of the relative pronouns. The vocabulary was inadequate. In grammar, the masculines and feminines were fairly well known, as was also the future tense of verbs, but participles and the subjunctive mood were bad throughout. On the whole, the unprepared passage gave better results than the prepared book.

The weak point in the *German* was with all candidates the arrangement of words, which was almost invariably faulty.

In the *geometry* papers the work was generally neatly written, and the figures carefully drawn, even when not accurate. A common mistake was the measuring of an angle of 68° instead of 72° ; and of writing 60° for 120° . The candidates should state definitely with what radius a circle is described, and not leave the examiner to discover from the figure. They should also understand that that is no "proof" which starts with assuming the result to be proved; and that the congruence of two triangles is not necessitated by the equality of two sides and *any* angle. There was much confusion as to the difference between "alternate," "adjacent," and "opposite" angles.

Few of the candidates in *higher algebra* attempted both the problems satisfactorily, and in consequence the number of really excellent papers was very small; at the other extreme the number of very poor papers was relatively high. Not many candidates made use of factors in the solution of the quadratic equation.

Many of the answers in *botany* were very creditable, but more care should be taken to answer exactly the questions that are asked. There was a tendency to spend time in ornamenting the papers with pictures of little scientific value. Drawings should be simple, clear, and to the point; their various parts should be labelled.

More attention should be given in *chemistry* to writing out results of experiments and making diagrams. It cannot be too strongly urged that a few experiments carefully made and accurately described by the pupils themselves are of far higher value than any amount of mere book-work.

The fact that such expressions as "oxide of candle" and "sulphate of chalk" were freely employed suggests a lack of really *definite* instruction.

It seems hardly necessary to introduce chemical equations at so early an age. They are nearly always misunderstood, and are seldom given correctly.

The *heat* paper was, on the whole, thoroughly well done, and most of the work showed an intelligent grasp of the subject. More attention needs to be given to quantity of heat, some of the best papers being spoiled by poor answers to the question on calorimetry. Candidates should always indicate the kind of thermometer in stating temperatures.

With regard to the question on temperatures in the *domestic economy* paper, since a knowledge of temperatures is fundamental to every branch of domestic science, it is a matter for regret that less than one-eighth of the candidates have been able to give the standard boiling-point of water, while a very large number so little realise differences of temperature that they give it as *below* the normal temperature of the human body, or within a few degrees of, and even below, freezing-point. This seems to show the teaching of this subject is still far from being as experimental and objective as it should be.

JUNIOR.

The work in *arithmetic* showed an improvement on that of last year. The question dealing with areas was less successfully attempted than any other, there being a general tendency to confuse area and volume. Candidates should be taught not to employ long division when dividing by such numbers as 3,000 or 200, and should also apply some rough check to their answers in order to be sure that they are at least reasonable.

In the *Old Testament* paper an immense amount of superfluous matter for which no marks could be given was sent up, and great confusion as to names occurred.

In *ancient history* there was a tendency to write at too great

length on small questions, and occasionally marks were lost by failure to read the question properly.

In general, candidates taking *English history* are still apt to consider an answer adequate which contains merely an unconnected mass of facts and of dates. There is an almost universal lack of general ideas, which greatly impairs the value of the work. To be satisfactory an answer ought not only to show powers of memory, but also comprehension and grasp. The merit of much of the work is also lessened by its defective form. Care should be taken to teach candidates to answer the points of a question, and not to make every question a mere peg on which to hang an indiscriminate string of irrelevant facts.

Very few of the candidates failed to make something of the paper on *English grammar*, and the general average of marks was good on the whole. The least satisfactory portion was the paraphrasing, which in the majority of cases was very poor. Most of the candidates contented themselves with the substitution of synonyms, word by word. Very few candidates attempted the question on the circumstances under which words of Latin origin have passed into English.

Historical allusions in the papers on *Julius Caesar* were not so well understood as points of "antiquity," and were often but vaguely explained. The failure in many cases to express in the candidate's own words the sense of a long passage in the play is very marked. It looks as though single words of sentences had been more studied than consecutive passages.

The *essays* reached a fairly satisfactory standard. The handwriting and spelling showed an improvement. The majority of candidates wrote grammatical and idiomatic English, but they should be warned against aimlessness, irrelevancy and flowery writing.

In the *geography* paper, in the map the railways were not very good, and surprising ignorance was shown of the latitude and longitude, and even in many cases of the meaning of these terms.

The translations from *Latin* passages into English are marked by precisely the same fault as last year, viz., the deplorable lack of English grammar. Latin words and constructions are slavishly translated without any regard to sense.

Whereas the translation from *French* was fluent and generally correct, the grammar was of a meagre description, and composition was distinctly inferior. The majority of the attempts at rendering the simple passage of English into French resulted in unintelligible confusion. This arose not merely from lack of vocabulary, but from entire disregard of the elementary rules of concord.

Many failed in an attempt at a numerical verification of a result in the *algebra* paper, apparently on account of ignorance of the meaning of the word "verify." The use of factors for the solution of quadratic equations should have been more general. In the solution of the problem there was some tendency to use different units, e.g., pounds and shillings, in the same equation. The answers to a question on the graphical solution of simultaneous equations suggest the following remarks:—

(1) A large minority of the candidates appear not to have been taught the subject of graphical algebra at all.

(2) Conventions as to the positive and negative directions were not very strictly observed.

(3) The units of measurement suggested by the squared paper were not always adopted. In some cases different units were employed for the x and y directions respectively with no explanatory statement.

(4) The question involved a proof of the concurrence of three lines, but many candidates did not appear to realise that all the lines should be contained in one diagram.

Absence of construction lines and carelessness in using the

correct scale were common faults in the *geometry* answers. The diagrams throughout the paper were of good quality. The construction of a triangle—given base, side, and altitude—was not well done; the question was often misread, and the explanation given of the method of construction was frequently incomplete or unintelligible. Many candidates illustrated their method by an example without proving that the method was general. Pupils should be encouraged in such questions to draw a rough diagram when thinking out the problem before illustrating their answer by an accurate figure. Many of the candidates did not know the meaning of the word "locus," and most of those who did find the required locus empirically without giving any proof. Candidates often fail to understand, and still more frequently fail to state with any clearness, which are the *corresponding* sides and angles of two congruent triangles. Many fail to distinguish between equal and congruent or between similar and congruent triangles. A theorem which can easily be verified by a simple superposition was proved by many of the candidates by assuming Euclid, I. 26 and I. 32. It should always be remembered that the intention of recent changes in geometrical teaching is to encourage the use of the pupil's intuition and intelligence rather than mere memory. It is by no means clear that this object has always been kept in view, and there is a danger that the older methods of proof may be replaced by others no less arbitrary and no more naturally convincing.

The chief points to criticise in the *mensuration* are:—

- (i) The tendency to give diagrams without verbal explanation as to how they have been constructed, or even the scale that has been used, the examiner being left to gather the information as best he may from the diagram itself.
- (ii) Ignorance of the fact that areas of similar figures are "as the squares" of corresponding lengths, and that their volumes are "as the cubes" of such lengths: the latter ignorance being most marked.
- (iii) Failure to see when an answer is ridiculous.

Candidates in *applied mathematics* seemed to prefer to use graphical methods where possible, and the idea of resolution of forces was imperfectly understood; many papers were shown up containing an unlettered figure and a result with no indication as to which line or angle had been measured; in many others the figures were not drawn in the correct proportions, or were given without explanation.

The questions in *physiology and hygiene* were done better than those on elementary chemistry and physics, the result being that several candidates who passed in the former subjects failed to qualify in the latter. The question concerning the effects of temperature and pressure on the physical characters of ice, water, and steam was in particular badly done, extremely few candidates having any knowledge of latent heat, or of the maximum density of water. Also, in answering another question, a large number stated that hydrogen was one of the chief constituents of air.

In *experimental science* the questions on dynamics were done especially badly. In answer to that about mixtures and compounds, many—if not most—of the candidates dragged in the familiar experiment of separating iron filings from sulphur with a magnet, though they were specially asked to contrast certain gases. In fact, the answers both to this and other questions indicated that candidates are far too much inclined to get up certain stock answers by rote, rather than to study and digest the subject for themselves.

Candidates are again reminded that, when a special experiment is described and set for them to do and draw inferences from, they are required to perform it according to the directions given. An examination of the action of solvents was, in many cases, only systematically carried out with water as the solvent.

The questions in *practical chemistry* involving observation were very rarely well done. In a majority of cases the candidates appear to have formed some idea as to what "ought" to happen, and too obviously allowed this to prejudice their observation of what did take place.

The results on the *electricity* paper are, as a rule, disappointing, and the general average reached is very low. In a large number of cases candidates have got up a stock question, which they answer more or less satisfactorily, while their answers to other questions show that they have obtained no useful grasp of the subject.

SENIOR.

The work in *arithmetic*, on the whole, may be regarded as fairly satisfactory. The finding of common multiples, within given limits, of two numbers proved more troublesome than was expected, and many candidates, who gave good answers to the other questions, failed to accomplish this. The weaker candidates showed the usual aversion to decimals, and the working of some answers was frequently made unnecessarily long and laborious by the use of vulgar fractions. In many exercises the true meaning of rate per cent. was not clearly understood, and actual gain was often given in place of gain per cent. The omission of all units was a very prevalent fault, and was the cause of many avoidable errors. In answers to a question having reference to areas and lengths, areas were frequently taken as lengths and lengths as areas, while no distinction was made between a yard of material, of stated width, and a square yard. The answers to a question on compound interest were frequently rendered of little value by an approximation being made in the middle of the work through candidates not realising that where the divisor is very small, relatively to the dividend, a slight change in the divisor may have a material effect upon the quotient.

In *English history* (Period A), much improvement is necessary in the exercise of individual judgment and in the ability to select facts relevant to the subject treated. The question which required a comparison of the movements which led to the depositions of Edward II. and Richard II. was generally answered by two entirely separate accounts of the two reigns. Sometimes they were put in parallel columns, but this alone was not sufficient to indicate a true comparison.

The question on the regulations of the Great Charter was done well; but apart from this, not enough attention has been given to the important constitutional developments of the period.

In *English history* (Period D), the examiner was struck by the contrast between the *knowledge* of facts and the *use* of them. The failure of a large number of candidates to use their brains as anything but a storehouse indicates imperfect methods of education.

Very few candidates in the *English grammar* answers attempted to explain the origin of certain words or phrases, and, as a rule, the explanations were more ingenious than accurate. The number of those who knew something about metres was as large as perhaps could be expected.

The subject-matter of *Chaucer* had, in most cases, been well mastered, and many passages learnt by heart. The answers given to the purely grammatical, in contradistinction to the literary, questions were, for the most part, unsatisfactory; few candidates could conjugate a middle English verb, or show from the text the further loss of inflexions that took place during the fourteenth century. In no paper was there evidence of any acquaintance with the main features of Anglo-Saxon accidence.

Attention is directed, in the answers on *Julius Caesar* to the prevalence of such elementary errors as the statement that Julius Caesar could not possibly have spoken Latin. This is the result

of an attempt to cram up lists of anachronisms, &c., without any knowledge of their meaning.

It is a matter of regret, says the examiner on *King Lear*, that the style of several of the best papers was disfigured by vulgarisms.

Of the various subjects proposed for the *essay*, printing and the value of a study of languages produced little that was not threadbare; but the value of success as a test of merit called forth more thought, while the description of an incident was treated not infrequently with freshness and originality, which in one or two cases showed a really striking power of immediate personal observation.

Candidates should, however, have it impressed upon them that, however scanty their ideas may be, they are not reinforced by being repeated three or four times under a thin disguise.

The harder *Latin* prose was fairly done by about 10 per cent. of the candidates; several, however, attempted it and came to grief, when they might have succeeded with the easier piece. As a rule the standard was low, and quite half of the pieces had most elementary mistakes, both in accident and in syntax; other mistakes were caused by thoughtlessness.

Of *Latin* verse five specimens only were submitted, none of them being of average merit. Of the essays, one or two were really good, and many showed considerable promise.

The passage for translation into *French* seems to have been found hard; but the comparatively free "letter to a friend" proved in most cases to contain quite as many pitfalls for the unwary. A large number of candidates forget that in writing *French* in the first person one must remember one's own gender. All through the knowledge of genders was very faulty; and the spelling, even of such very common words as "mer," "gare," or "campagne," distinctly bad, accents being left out or misplaced very largely. This may be attributable to the fact that a large number of candidates are taught on some exclusively oral system, and have not acquired the habit of accurate writing and spelling.

In *algebra* the work on surds and indices seems rather weak, but apart from this a fair standard is attained generally. It would be a good thing if the principle of "dimensions" were more generally known, as candidates would in this way avoid sending in answers that are manifestly impossible, or writing a page of work which is obviously wrong in its second line.

The book-work on *geometry* was generally well done, but in the majority of cases no attempts were made at riders, and when they were attempted a serious lack of analysis was noticeable. A large number fell into the mistake of particularising a general problem, by assuming, for instance, that certain chords of a circle must be diameters, or by giving special values to parts of a triangle which was to be constructed. In some cases this was apparently due to a careless reading of the question; in others to thoughtless statements obviously at variance with the figures drawn.

It would seem that there is still too much dependence on learning propositions by heart, either as given by Euclid or from other books.

The practical work in *chemistry* was carried out with a considerable degree of accuracy by many candidates; others show a carelessness, inaccuracy, and in some cases a lack of power of expression, which would be seriously detrimental in any walk of life.

A similar criticism applies to the style of writing in many of the theoretical papers. Comparatively few candidates have a clear conception of the arguments in favour of the atomic theory to be derived from our knowledge of the proportions in which elements combine. The reasoning, being of so simple a nature, affords excellent illustrations of the methods of establishing a scientific theory on the basis of observed facts. The

theory itself is, moreover, so far-reaching and of such importance to the science of chemistry, that one cannot but think that beginners should be thoroughly familiarised with the simpler arguments in its favour.

The work was not very satisfactory on *light*. There was constant confusion of "convex" with "concave"; and great carelessness in distinguishing between definitions and rules for mirrors and for lenses. More practice in the graphical solution of lens and mirror problems would be desirable. In the drawings the reflecting or refracting surface should be treated as practically a straight line.

The work on the whole was good on *heat*. The chief fault was the tendency to write long answers which had little connection with the question. For instance, in explaining the meaning of the "latent heat of steam," many thought it necessary to write an account of its experimental determination.

THE NEW SPIRIT IN EDUCATIONAL ADMINISTRATION.¹

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IF we consider what the present-day educational atmosphere means to the child and his preparation for life, we should, I think, be thankful for the possible expansion of educational effort in the future, and the professional latitude we, as teachers, are now enjoying. For many years the child has been pressed into scholastic moulds that never fitted his developing powers. He has been stuffed with unrelated, undigested facts he had no stomach for, and his natural activities and unresting curiosities have been firmly and most effectively suppressed. There is now a chance for teachers becoming scientific investigators in the realm of childhood's natural manifestations. It is not in the subjects of instruction that our work should chiefly lie, but in the study of the object—the child, to be instructed, to be fitted for life. In our desire to present our pupils to official estimate as examples of our skill in imparting instruction, we have missed the very obvious mental truths that each one is possessed of a distinct individuality, and that children, as children, have rights to be recognised and safeguarded. Without a certain measure of freedom, how is it possible to expect individuality to develop? And now that such freedom has come, it is our positive duty to utilise it to the utmost. Just because of their tender years and their consequent lack of self-assertion, we are prone to set aside those traits of childhood that, rightly used, are full of true educational import. And it must be said that much of this in the past was due to the unreal character of the instruction we were expected to give. The acquirements of each child were subjected to rigid measurement, officially scheduled and pronounced worth so many pence per subject more, if satisfactory; or, in the reverse case, the total money payments suffered deductions in tenths for "faults of instruction and discipline." The value of such realities as mental growth, habit formation, the training of the will, and the moulding of character could not, by any possibility, be reckoned in a sliding scale of money payments, and it is a feature of the new system that no such attempt is made.

That there has been of late a decided gain to the child in the brightness of his school life few will deny. The unreasoning

¹ From an address delivered to the Dundee Branch of the Educational Institute of Scotland, on October 23th, 1905.

restrictions that hampered the free play of his natural instincts have to a great extent been removed, and a liberty of action offered to the teacher which it is wrong to neglect. The natural impulses of child nature cannot be ignored in any scheme of education. They supply him with a boundless store of energy which is uncontrollable by himself, but which is a strong educative force. In this greater liberty we now enjoy there is also implied a consequent increase of responsibility. But this the thoughtful teacher will accept with pleasure, for it will extend the range of his influence and enlarge his usefulness. This added responsibility implies that the child shall be reasonably equipped for the future; as a human being, capable of the rational enjoyment of life; as a citizen, willing and fitted to bear his part in the government of his country; and as a worker, deft of hand and clear of mind, to support himself and those dependent on him.

Under the new *régime*, I hold that there are no official obstacles to teachers realising in a very great measure those ideals. What I fear most is that discouragement may come in the face of the difficulties of casting aside former habits of mind. We are often told, and I think we must agree, that education, or rather the practice of teaching, is essentially a conservative process; but, confronted with more abundant opportunities for real service, I am convinced that Scottish teachers will earnestly strive to cast aside machine-made methods, and make the most of the new spirit that permeates educational work. It would solve many a social problem if we could turn out our pupils with genuine capacities to enjoy their lives. The suitability and brightness of our studies, and the natural cheerful manners which all teachers ought to have, should bring to our schools tons of happiness they formerly never knew. And it is such a combination in things educational that our controlling authorities wish to create. Sydney Smith well said:—

“If you make children happy now, you will make them happy twenty years hence by the memory of it.”

It is this breath of humanity that our schools principally need now a days. They have too long been places in which work was divorced from pleasure, and where it was almost a sin to be suspected of gaiety of heart. The natural play of emotion or any display of affection was supposed to be out of place in school life.

But what is more striking is the oft expressed desire that school life should fashion the pupil for intelligent citizenship. Our former systems have failed miserably in this particular, either to awaken an adequate interest in public affairs or to sustain it on a decent level when aroused. An educated democracy is always a source of stability to a nation, but the education it requires is not mechanical conformity to certain artificial standards of instruction, but whatever will conduce to the production of the sound judgment, the keen, alert mind, and the power of sustained thought. The spirit of the times is seen also in the facts that the greatest national efficiency is to be found in the highest development of each individual, and the assertion of the importance of each unit in the corporate life of the State. Just as we declared that one of the most suggestive ends was for the pupil—the recognition of his individuality, or the right to have his own particular mental inclinations protected—so, in the case of the State, there is the sense of property in the individual, and the urgent need for the exercise of his powers in its service. These considerations of our social economy have become specially prominent in recent days, and have undoubtedly tended to the abolition of those trammels under which teachers formerly worked.

A very significant result of the regulation of educational work during the thirty years since 1872, is that it has not succeeded,

in the main, in producing in the mass of the people a state of mind that is alert, eager, active, earnest. The aim seems to have been too much the ingathering of knowledge, the accumulation of facts around certain subjects. The relations of these to the present or prospective wants of the pupils were of little moment. Is it too much to hope that now, recognising that our point of view must be changed, our aim should be to fashion men and women physically fit to feel the glow of life and mentally keen to grapple intelligently with life's problems? The lack of the feeling of personal responsibility amongst the young men of to-day is frequently deplored in commercial circles, and I have often heard that the causes attributed were the superficial character of their attainments, and their consequent inability to appreciate what was vital in business transactions. I think such reproaches will speedily cease when we have learned to place more value upon the inculcation of good habits of mind than upon abundance of information. Both in the conduct of life and in the pursuit of knowledge, we want men and women to use their understandings.

To us, one of the most noteworthy features of the “New Spirit” is that, at length, the teacher is being accorded his true place in the educational world. Formerly he had to be content to do his work under explicit Code requirements, unvarying, no matter what were the necessities of the pupil or the circumstances of the school. Nay, more, we have been taken into the confidence of the Department, which has determined to utilise to the utmost the teacher's expert knowledge and his successful experiences. Surely this is an exaltation of his office, and an authoritative recognition of the dignity of his calling. Every Scottish teacher has now a voice in the determination of what and how much (within certain limits) his pupils should learn. He can place on record his opinion of what can reasonably be expected at the various stages of the child's school life, and it is certain that all such opinions will receive considerable attention.

Instead of being a mere Code-grinder, the new official attitude is that the teacher is a servant of the State towards the elevation of the mass of the people. He is to be a thinker about educational questions as well as a worker in school. At length, he has attained to the liberty of importing his intelligence into his work, and the result will assuredly be most beneficial to his pupils. It is impossible to over-estimate what this means in the freshening of school life all over the country, both for teacher and pupil. Whatever tends to the exercise of greater intelligence in the performance of any kind of work is of immense consequence to the result. The school-room is the place where mental growth is witnessed, and there can be no gainsaying the fact that such mental processes as the evolution of the power of conception, the disciplining of the faculty of imagination, and the foundation of sound judgment and stable reasoning, can only proceed under careful and intelligent tending.

“What we make the children love and desire is more important than what we make them learn.”

Consider, also, what work of this character means in the social estimate of the teacher's worth. Once viewed as a worker whose efforts demand the exercise of the higher powers of mind, the teacher is on a plane he could not otherwise aspire to. He is admitted to be a man of science, one who brings the truths of psychological science to the test of actual practice in the school. The child becomes to him not only a receptacle for bits of information more or less useful, but an object for patient study, in the relationships of home and school, in the playground amongst his companions, and in the propensities which show the tendency of his moral nature. There can be little doubt that the rewards of an adequate social status and more satisfactory remuneration will follow in due course. In the

aggregate, we are safe to leave to the operation of economic law the adjustment between services rendered and their value commercially considered. I would not have the teacher's prospects of advancement the subject either of special legislation or any other ulterior inducement. I would rather that the public estimate of the teacher's worth should be of such a high character, that the strong feeling thus created would attract the most capable men and women, and thereby improve conditions of service. And it is because I think this is now a possibility that I emphasise a just recognition of the new spirit in educational administration.

To you, teachers actively engaged in the responsible duties of school work, what I would specially say is that, as far as I can foresee, your lot will be made, not only more enduring, but it is in your power to make it intensely interesting. Teaching is work in the world of spirit, and to ensure true success it must be undertaken in no mean frame of mind. Your official superiors have proclaimed a very lofty conception of their part, and it is for you to take full advantage of the freedom of action now afforded, and to give to your pupils the very best both of genuine instruction and forceful example. No one can unduly exalt the importance of your calling. It is one of the noblest on earth, and in its rightful exercise is fraught with great issues to the whole body of the people. I would have all teachers to strive to attain to that height of excellence, the mark of which is the affectionate regard of the people amongst whom they work. It was this feeling which was in the mind of Philip, King of Macedon, when he wrote the following curious letter to the great Greek teacher, Aristotle:—

Philip to Aristotle—Greeting.

“Know that I have a son born. On this account I am greatly thankful to the gods, not so much for the birth of the child as for his being born *during your times*, for I hope, that by his being bred and educated *under you*, he will become worthy of us and worthy to succeed to the management of affairs.”

HISTORY AND CURRENT EVENTS.

THAT England is the mother State of the great North-American Republic is a commonplace of our text-books, which they realise more vividly on the other side of the Atlantic than we do here. And we in the mother country realise even less the other half of the whole historical truth, that England is also the mother Church of North America. Therefore, we call attention to two items of recent news. The vestry of St. Saviour's Cathedral, Southwark, “is to be restored to its original purpose as a chapel by funds provided by the alumni of Harvard University, to commemorate the baptism, at Southwark, of John Harvard,” who left England as a Puritan, discontented with the then ruling tendencies, and became, like all his fellow-emigrants, a Congregationalist. The Episcopalians of Boston, U.S.A., are thinking of building a cathedral on the model of St. Botolph's, Boston, where John Cotton was vicar and for twenty years neglected to use the Book of Common Prayer till he fled to America from impending prosecution, and became such an influential Congregationalist preacher in his new home that the town was named after his old home in England. Episcopalians were not allowed to live in John Cotton's Boston.

THERE is a danger in comparing “current events” with those of “history.” It is that which arises from too “little knowledge.” Last month a deputation of women marched to the West End of London to demonstrate on the “unemployed” question. We would not be understood as reflecting on the

motives of those who practically sympathise with suffering, but surely they were ignoring circumstances when they urged the women by reminding them that “the women of Paris saved France,” and appealed to “the women of London to save England.” They were obviously referring to the famous march to Versailles of October 5th and 6th, 1789, so graphically described by Carlyle, and better understood now than when he wrote. They did not remember that France was literally anarchic, governmentless, nor that it is questionable if the presence of Louis XVI. in Paris did “save France,” whatever that half-phrase may mean. We in England now suffer, if at all, from the too-great power of government. And deputations are not more than a small portion of the forces that are making for social salvation.

“A SPECIAL mission will be sent to Tokio early next year to convey the Order of the Garter to the Mikado.” So the papers announce. The Order of the Garter is one of our relics of chivalry, one of the institutions of mediaeval Christian Europe. The members used to undertake duties which implied Christian belief. Are those promises now not required, or will there be a special dispensation for this non-Christian ally of a European Power? Or is Great-Britain-and-Ireland-and-Dominions-beyond-the-Seas not a purely European Power, but half-Asiatic? And is it therefore only in ancient forms that it is still Christian? Is it really as much Mohammedan, or Hindu, or Buddhist, or pagan, as it is Christian? Or is Christendom, regarded from the point of view of international law, enlarging? International law, as first laid down in 1625 by Hugo Grotius, was a system of Christian thought, fitted only for States living under the shadow of the Holy Roman Empire. Does therefore the admission of Japan on equal terms to the international society of Europe imply that it is, so far, “Christian”?

PRESIDENT LOUBET has been visiting the King of Spain, and said in a speech that “peace between nations—which is the supreme aspiration towards which human progress tends—rests to-day, as upon its most solid foundation, upon armed force. The more powerful that of each nation is, the surer will be universal peace.” These words were echoed by King Alfonso XIII. (XIII. of what?). We will not criticise the logic of these sentences—they were uttered on a festive occasion, and therefore must not be cruelly treated. Nor will we contrast them with the King's immediately preceding remark that “the hearts of our two peoples beat under the influence of sentiments of profound esteem and warm friendship,” because kings' words are endowed with official wisdom. But we will ask our readers to admire the millennium contemplated—it consists “supremely” of peace—and the infinite expense which this millennium entails. The “peace” is based, not on the “love and joy” which is the apostolic prelude, but on fear—the fear of the thief and robber that he will find the house guarded by an armed man.

ITEMS OF INTEREST.

GENERAL.

FROM notes which have appeared in these columns, readers know that the French Government has recently established a system under which a number of young masters in English secondary schools may be attached for a year to certain secondary schools in France. The French Ministry of Public Instruction is most anxious to extend the scheme and to find similar opportunities in suitable English girls' secondary schools for young Frenchwomen, who will afterwards be employed in the State schools of their own country. The French Govern-

ment has approached the Board of Education with a view of obtaining its assistance. In the opinion of the Board the proposal has much to recommend it. In the majority of cases it will probably be found that the candidates have too little pedagogical experience to be entrusted with the continuous instruction of a class of girls. Nevertheless, there are many ways in which such a foreign teacher may give valuable assistance. If she possess tact she will be consulted by her English colleagues, who are responsible for the regular instruction.

HER main usefulness will, however, lie in the direction of immediate contact with the girls in order to develop their powers of conversation. To this end she should be employed to conduct small "conversation groups" of five or six pupils, and it will generally be found desirable to limit these groups to girls over fourteen. The chief object is to induce the girls to talk rapidly on subjects within their grasp in a manner which is not possible in the class-room. The *assistante* will guide the conversation, but not control it too rigidly. Not more than two hours' work a day is to be demanded of such *assistantes*. The rest of their time should be at their own disposal. Though these *assistantes* are not members of the staff their services will necessitate some remuneration. In boarding schools it would probably be sufficient if arrangements could be made whereby they should be boarded and lodged in one of the boarding-houses. In schools where such an arrangement is not possible it would be necessary to offer such salary (say from £60 to £75) as would cover the cost of board and lodging. Headmistresses who are willing to co-operate and to employ such *assistantes* are requested to communicate with the Director of Special Enquiries and Reports, Board of Education Library, St. Stephen's House, Cannon Row, Westminster, S.W.

At a recent conference on educational questions, convened by the Association of Headmistresses, the following resolutions were adopted: "That, in the opinion of this conference: (i) Co-education in schools for children under ten years of age has many advantages if sufficient care is taken to place it sufficiently under the control of able and responsible women. (ii) In rural districts where the secondary school population is sparse and its character more homogeneous, the mixed school is often the best solution of the educational problem. (iii) But that under the conditions of life in this country, the mixture of social types, the diversity of religious opinion, and, in general, the heterogeneity, of the secondary school population, it is better that the system of secondary education should proceed on the principle of supplying separate schools for boys and girls over ten years of age." "That this conference welcomes the new Code for public elementary schools, especially on account of its elasticity and freedom, and the opportunities it gives for adapting the curriculum to local requirements." "That the widespread realisation of the work of the various types of secondary schools is now a matter of vital importance, since local education authorities are empowered to take action in maintaining, aiding, and establishing secondary schools within their areas."

THE North of England Conference will be held at Newcastle-on-Tyne on January 5th and 6th, 1906. The Honorary Secretaries are Mr. A. Goddard, Secretary of the Newcastle Education Committee, and Mr. F. H. Pruen, Secretary of the Armstrong College, Newcastle.

THE annual general meeting of the Association of Teachers in Technical Institutes was held at the Birkbeck College, London, on November 4th. The Association already has a membership of 300, exclusive of the Association of Teachers of Domestic Sciences, which is affiliated with it. Mr. W. J. Line-

ham, the President, was in the chair, and moved the adoption of the report of the Council, which was subsequently agreed to. The Council recommends in the report that meetings of teachers in provincial technical institutes be called to lay the claims of the Association before them directly. A resolution was passed instructing the Council to call meetings of the teachers in provincial technical institutes and to consider the following matters, with full powers to act therein: (a) The formation of local or provincial branches of the Association; (b) joint action or federation with the West Riding Association of Teachers of Science, Art, and Technology, the Federation of London Teachers, and other bodies of teachers. One of the most important matters discussed during the year has been the registration of teachers. The Council recommends that steps be taken at an early date, by the deputation or otherwise, to urge upon public examining authorities the importance of securing closer connection between the examiner and the teacher.

IN 1899, says a *Times* correspondent, the Witwatersrand Council of Education raised a sum amounting to £100,000 for the purpose of providing elementary education for the Uitlander community. This money, which now amounts to about £115,000, has remained intact until the present time, with the exception of a portion of the interest which has been given to the Transvaal Technical Institute. The trustees have decided to dispose of the fund in the following manner: £60,000 to the Transvaal Technical Institute, and £30,000 to found a public school at Frankenwald more or less on the lines of an English public school. The balance of £25,000 will probably be divided between Jeppestown High School and Johannesburg College, but is held over pending the report of the Government Commission on secondary education. The Frankenwald estate was given by Mr. Beit to the Transvaal for educational purposes.

A MINOR committee was appointed recently by the Gloucestershire Education Committee to report on the relative cost of providing the several districts of the county with efficient systems of higher education. The minor committee has issued its report, in which the following recommendations are made: (i) That in future the grants to the several local higher education committees shall include all contributions other than building grants in support of higher education, with the exception of—(a) those allocated for the work of the agricultural, domestic economy and mining sub-committees; (b) fees for the instruction of pupil teachers, and (c) scholarships. (ii) That the Education Committee shall determine what secondary schools, if any, shall be subsidised, but that the applications for such subsidies shall be made to them on the recommendation of the local higher education committee concerned. (iii) That the grants received from the Board of Education in respect of evening schools and classes be retained by the several local higher education committees, and that the grants received for the instruction of pupil teachers be retained by the Education Committee, unless otherwise arranged. The report has been adopted by the Education Committee, but the County Council has referred it back with an intimation that, whilst ready to give facilities for those districts that express willingness to be rated for the purpose of higher education, the Council could not consent to an increased general county rate.

A BRANCH of the Geographical Association has been formed in South Africa. The movement has the entire approval of the Education Department at Capetown.

THE County Council of Somerset has passed the following resolution: "That this Council desires to call the attention of the Board of Education and the Treasury to the inadequacy

of the present grants for training pupil teachers in the country districts, where the expenses of training under the new regulations largely exceed those of training in large centres of population. They further desire to record their opinion of the importance of securing a proper proportion of country teachers for country schools."

IN accordance with the suggestion of the Board of Education, that the teaching of history in schools should be illustrated, so far as practicable, by taking advantage of anniversaries and enlivened when possible by practical illustrations, the teachers in some schools availed themselves of the opportunity offered by the centenary of Trafalgar. At the Folds Road Council School, Bolton, Mr. R. S. Wood, the headmaster, arranged a demonstration in celebration of the battle of Trafalgar and the death of Nelson. About 450 children were paraded in the playground, where they went through mass drill and other movements, singing patriotic airs, in the presence of a crowd of visitors. A large number of local gentlemen, including the aldermen and councillors of the ward in which the school is situated, the members of the Education Committee and others, were present. The musical programme rendered by the children included Kipling's recessional hymn, "Lest we forget," "All people that on earth do dwell," "The death of Nelson," the National Anthem, and "Praise God from Whom all blessings flow." An open-air exhibition, illustrating the period of history with which the celebration was concerned, added to the interest of the occasion.

THE report presented at the recent annual meeting of the Midland Counties Union of Educational Institutions at the University of Birmingham shows that examinations were held during the year ending September 30th at 155 centres in Bedfordshire, Cambridgeshire, the Colonies, Derbyshire, Herefordshire, Lincolnshire (Lindsey division), Staffordshire, Warwickshire and Worcestershire. At these centres 7,955 exercises were worked in 689 separate examinations. In addition to this general work of the ordinary examinations, the Council of the Union examined 67 pupil teachers for the Herefordshire County Council Education Committee, 26 candidates for scholarships under the Longton Education Committee, and 14 candidates in a special book-keeping test for the Birmingham Education Committee. The percentage of passes for the year was 75·8, as compared with 70·6 in 1904. The statement of accounts shows that there is a balance in hand of £576. Prof. Turner, Chairman of the Council, commenting upon the report, said ten centres were added during the year, and 106 separate examinations, giving an average of ten examinations for each new centre. Regarding the percentage of passes during the last ten years, Prof. Turner pointed out that the percentage steadily declined, becoming lowest last year. The reason was that the Council quietly increased the severity of the examinations. The character of the instruction is certainly not deteriorated, but has probably improved, and although the examination was no less stringent last year than before, the percentage of passes began to increase, which is an encouraging sign.

THE third annual report of the Manchester Education Committee, dealing with the year 1904-5, has been received. It contains abundant evidence of the energy and ability which have been expended in organising the various grades of education in the city. In referring to higher education, the report states that the arrangements for the institution of a Faculty of Technology, under the terms of the Charter constituting the Victoria University of Manchester, which have been for some considerable time the subject of negotiation between the Education Committee and the University authorities, have now been

brought to a successful issue. In virtue of the agreement which has been made, students of the Municipal School of Technology may now proceed, under the conditions laid down, to the degrees of Bachelor of Technical Science or Master of Technical Science. The same section of the report points out that the decision of the Committee and of the Council to take their share of national responsibility for the training of teachers for the elementary schools by the provision, in the first instance, of two undenominational residential colleges, one for men and another for women, has been carried a step further by the acquirement on lease of "The Dales," Whitefield, for the purpose of a training college for men. The plans showing accommodation for 100 students were approved by the Board of Education last July. The arrangements for the acquirement of a suitable building and site for the establishment of a training college for women are now under the consideration of the Committee.

SUMMARISING the work done in its secondary schools the Manchester Education Committee reports there are at the present time 875 scholars (511 boys and 364 girls) on the books of the Municipal Secondary School. Of these, 652 are children of ratepayers and 223 children of non-ratepayers of the city. The number of scholars admitted without payment of fees is 161, viz., 98 boys and 63 girls. In consequence of the large number of applications for admission to the school which have to be refused owing to the lack of accommodation, the Committee has decided, with the approval of the City Council, to prepare a scheme for the erection of a secondary school for girls upon the site in Chorlton Street already in the possession of the Committee. A report setting forth particulars of the proposed school is now under consideration. We are glad to notice, too, that arrangements have been made by the Committee with the directors of the Manchester Athletic Ground for the use of the ground and an adjoining field as playing fields for the students of the secondary school and pupil teachers' college.

WE have received from the Secretary a copy of the programme for the present winter session of the Modern Side Saturday Club, which has been formed at the City of London School "to promote the social, physical and intellectual interests of the members." The fixtures include visits to places of historical, literary and scientific interest in and near London, and a lantern lecture. The meetings are held fortnightly, and will go far to solve the problem of Saturday afternoon at a day school, to which subject we directed attention in our issue for September, 1905.

MESSRS. W. HEFFER AND SONS, of Cambridge, have arranged to publish a series of phonographic records for the teaching of English, French, German and other languages, which have been made under the supervision of Mrs. J. G. Frazer (the author of many well-known French school books). The publishers assert that after long experimenting and elaborate precautions in the making of the records it has been found possible almost to eliminate the metallic sounds associated with the phonograph.

FROM the twenty-eighth Annual Report, that for the present year, of the New Zealand Minister of Education, we learn the following facts regarding the secondary education of this colony: The number of endowed secondary schools giving free tuition to all qualified pupils at the end of 1904 was twenty, and the number of pupils holding free places was 1,595. There were besides about 387 holders of scholarships and exhibitions given by these schools, or by Boards of Education. Further, there were 2,291 qualified pupils receiving secondary education in the secondary classes of the district high schools, which numbered fifty-two. On the whole, therefore, the effect of

recent legislation and regulations has been to afford free secondary education for some 4,273 children from the primary schools, whereas at the end of the year 1901 the number was about 963. The total amount paid to Education Boards by Government for capitation on attendance at district high schools and for grants in aid amounted to £10,130, and, in addition, the claims for the last quarter had to be met. The amount expended by Boards was £12,257.

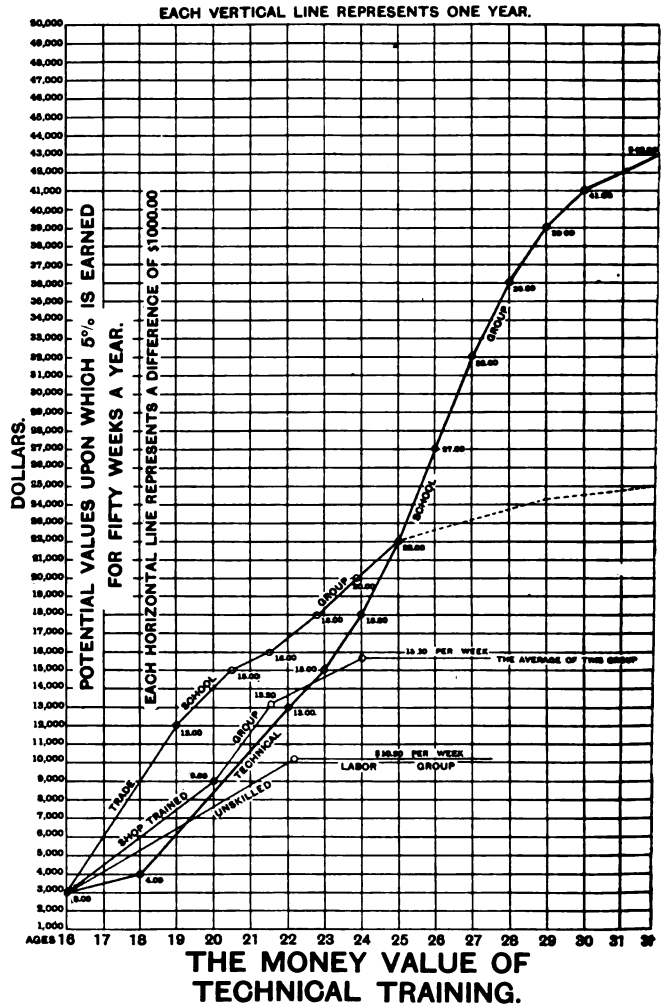
THE income of these New Zealand secondary schools for 1904 from school fees, not including fees for boarding, was about £28,595; from rents and interest, about £27,337; from endowment administered by the School Commissioners, about £4,711; and from fees and capitation paid by Government, about £9,323. The principal item of expenditure was for salaries—about £43,317. An interesting comparison is made between the salaries paid in New Zealand and in the United States. In Indiana and New York States the average salary of a high school teacher is £145; in New Zealand, principals—men, £452; women, £335; assistants—men, £226; women, £137. In twenty-eight large cities of the Union where the schools are also very large the salaries of principals range from £350 to £800. In the four chief towns in this colony the salaries range from £500 to £750 for men, and £375 to £450 for women.

A RECENT issue of the *Oxford Magazine* contains an analysis of the results of the recent competitive examination for the Civil Service of India for first-class clerkships in the Home Civil Service and for Eastern cadetships. The most conspicuous success belongs to Edinburgh University, which has secured the first, second, and third places with nine successes. Oxford has thirty-six names on the list and Cambridge twenty-eight. Four is the largest number from any one school, a distinction which falls to Cheltenham; Harrow, St. Paul's, Dulwich, and City of London each have three, Eton and Winchester two each. George Watson's College, Edinburgh, really possesses the best record, having first, third, and thirty-seventh.

IN a recent article the *Morning Post* insisted upon the value to schoolmasters and others of the study of the history of education. But the history of education as studied in training colleges is not what the writer of the article means by the expression. In the history of education, we are told, we have to consider educational opinion and educational practice. It is inadequate to gather conclusions as to the educational practice of a period from the educational opinion of the most progressive writers only of that period. Men like Mulcaster, Locke, Rousseau, Herbart, are beacons of educational thought, but they are misleading in every case if they are held to be the milestones of educational progress. Books like Quick's "Educational Reformers" are, the article continues, rather historical illustrations of writers who may readily be interpreted in terms of to-day's educational theory. It is valuable in many ways. It affords texts for exposition, paragraphs for quotation, biography for inspiration of educational effort, and subjects for essays. But it is not history. The pressing needs for the history of English education are thus summarised in the article: (i) A history of educational opinion which should present comprehensively both the conservative and progressive thought of each period; (ii) a national dictionary of the older educational institutions, with special reference to statutes, curricula, and methods historically treated, in each school; (iii) a history of educational practice in English

schools, as a whole, showing origins and developments of curricula, text-books, methods, and the like.

IN a recent address to the day students of the Manchester School of Technology, Principal J. H. Reynolds answered the question so often put by students: What real advantage, in a monetary sense, shall I gain by devotion to study? He directed attention to the accompanying diagram which graphically illustrates the value which the modern American engineer attaches to the technically trained man. It has been prepared by Mr. J. M. Dodge, of Philadelphia, a man of acknowledged eminence in engineering industry. The diagram is based upon the actual experience of large engineering works, and is specially valuable as showing the relative progress and the ultimate posi-



tions in the industry of the various types of men employed therein. From the diagram, it will be seen that the college-trained man who enters the works, at 22 years of age, that is, at a later period and at a lower wage than that earned by men who came into employment some years earlier, after a few years overtakes them, and progresses at a rapidly increasing rate, so that whilst at 32 years of age the rate of wages of the average man with inferior preparatory training is not more than 25 dollars per week, that of the technically (college) trained man will reach 42 dollars per week, with the prospect of a still further advance. Thus the technical graduate line of the chart represents the manufacturing establishment employing technically trained men

and abreast of the times in all particulars. We are indebted to Mr. Reynolds for permission to use the diagram.

ONE of the most instructive object-lessons placed before the British Committee for the Study of Foreign Municipal Institutions during its recent tour in Germany (says the *Municipal Journal*) was that furnished by the Doecker system of portable buildings. The advantages of buildings which are easily detachable, weather-proof and of great durability, which can be put together in the minimum of time, and with the minimum of trouble, are at once apparent. These buildings are not iron structures, the fault of such buildings being that they are very hot in summer and very cold in winter; neither can they be described as wooden buildings. They are constructed of a material which is fire-proof and damp-proof, and appears to be a sort of asbestos, hard, light, impermeable, and hollowed out in the centre to admit of ample ventilation. It is smooth, easily washed, and sanitary. It is for the erection of barrack schools and summer schools, such as that which formed the experiment undertaken last summer by the Manchester Education Committee, that the Doecker system opens up the most interesting possibilities. An important point in connection with these structures is that they are ready for occupation as soon as they are put together, and their erection is facilitated by the fact that all windows, ventilating shafts, and chimneys are supplied in their finished state before the work is commenced. Messrs. Hasserodt and Co., 52, Queen Victoria Street, are the representatives of Messrs. Christoph and Unmack, the sole manufacturers of the Doecker buildings.

THE REV. F. S. WILLIAMS, M.A., Assistant Master of Rugby School, has been appointed to the headmastership of Eastbourne College.

AT the speech day of the Newport Intermediate School for Boys, which took place on November 8th, the Bishop of Hereford delivered an address in which he praised the work which the intermediate schools of Wales and Monmouthshire are doing for the higher education of the people. In the course of his long life, he continued, he did not think anything had impressed itself more vividly upon his mind than the vast amount of undeveloped capacity there is in the young of the English nation. This capacity ought to be developed for the good of the nation as well as for the good of the individual. Education consists of three things: to draw out the capacities of the pupils; to give instruction which will be of use to the child in any station of life which it may be called upon to occupy; and the development of the best elements of his character. Dealing with continuation schools, the speaker said that a good system of continuation schools is one of the greatest needs in English education. Business, social and commercial arrangements must be made of such a kind that it shall be obligatory on boys who leave school early to continue some kind of useful and improving education at any rate until the age of 17. To-day a clever boy of 13 has, in many cases, by the time he reaches the age of 18 developed into a thoroughly ignorant young man. A good system of continuation schools would be one of the greatest of social improvements.

THE Civil Service Commissioners direct the attention of schoolmasters and parents to the fact that the scheme of examination for the forthcoming open competition for not fewer than six appointments to the post of Examiner in the Exchequer and Audit Department is very similar to the present schemes of examination for admission to Woolwich and Sandhurst, and for junior appointments in the Supply and Accounting Departments of the Admiralty, and that it is, therefore, suitable for gentlemen whose education has been conducted on ordinary public school lines. The subjects embrace English, Latin, Greek,

French, German, geography, history, mathematics, and science; but candidates will not be at liberty to take up all these subjects. They will be, however, permitted to take both Latin and Greek. Candidates must be between 18 and 20 years of age. Copies of the regulations, together with particulars of the pay and prospects, are obtainable on application, by letter, to the Civil Service Commission.

SCOTTISH.

AN important circular has been issued by the Scotch Education Department relaxing in some measure the stringency of the regulations for the calculation of grants under the continuation code. The complexity of these regulations has all along been the bane of the continuation school, and no inconsiderable part of the short time available for teaching purposes in these classes had to be taken up with the routine of registration. Of course, the Department is bound to provide proper safeguards in disbursing public money, but it is an undoubted educational gain that they now see their way to attain that end without making undue calls upon the time of the teachers. In future, in place of the separate forms for each division of the code, one Form (A 92) will be issued to contain all the totals of attendances on which grant is claimed in Divisions I., II. and IV., and a second Form (A 95) to contain the aggregate of attendance for Division III. Details relating to individual students will, as a rule, be dispensed with in both forms. The Department has prepared a composite form of register which has been specially devised to simplify the work of conducting continuation classes, and at the same time to furnish the necessary data both for calculating grants and for awarding certificates. These concessions are conceived in a thoroughly broad and liberal spirit, and it is the duty of teachers and managers to show their appreciation of them by the most scrupulous exactness in all the details of the curtailed registration.

MR. ANDREW CARNEGIE, who has been returned as Rector of St. Andrews University for the second time, chose the subject of "Arbitration" for his rectorial address. Mr. Carnegie said that while, on the whole, the world is much better than in previous centuries, there still remain the foulest blot, the killing of civilised men by men as a mode of settling international disputes. The reforms that have already taken place in the methods of warfare and the success of the Hague Conference may be accepted as evidence of the growing dissatisfaction with this last and worst relic of barbarism. In the tribunal at Hague he believes he sees the germs of a council of the nations which will maintain the peace of the world. At the conclusion of his address Mr. Carnegie intimated his intention to offer five prizes of the value of £100, £80, £60, £40 and £20, for the best essays on "International arbitration as a substitute for war between nations." The prizes will be open to matriculated students of the University for any of the years 1904-5 to 1906-7.

PROF. DARROCH, Edinburgh University, in his introductory lecture to the Education class, described the work of Mulcaster, who in his writings had insisted on the great importance to the community of an efficient body of teachers, and had advocated the university training of teachers. It is doubtful whether under modern conditions it is possible or advisable to have every teacher trained at the universities, although it is right that as large a number as possible shall enter the universities and go forward to graduation. Meanwhile, two things can be done for the betterment of the teaching profession. The number and quality of those fitted to enter upon a university course can be increased, and to do this the tangible rewards of the teachers must be increased, and the social recognition of the work and dignity of the teaching profession must be greatly extended.

PROF. LODGE, Edinburgh University, in his opening address to the History class, referred to the Nelson celebrations and commented on the comparatively small part which Scotland has played in the naval history of Great Britain since the Union. He welcomed the establishment of the great naval arsenal and base on the Forth, because he believes it will do more than anything else to create in Scotland the interest and love for the Navy, which she has always shown for the Army. It would be for the security of the Empire if Scotland became more closely associated with the naval traditions of Great Britain. While there is some truth in Prof. Lodge's criticism, we think he has taken an unduly deprecatory view of Scotland's share in naval history. Scotland can claim one great admiral, Duncan, whose fame does not pale before even the greatest of English admirals, and, unless they belie their names, no considerable portion of Nelson's captains were Scottish or of Scottish descent.

A CONFERENCE has been arranged between representatives of the Educational Institute of Scotland and the National Union of Teachers, in order to try to secure a common policy in regard to the subject of superannuation. The actuarial revision of the Superannuation Scheme, which is due next year, affords an excellent opportunity for remedying some of its most objectionable features, and the chances of success will be materially strengthened if the two National Associations work hand in hand.

THE latest meeting of the General Council of the Scottish Liberal Association, which was held at Kirkcaldy, was chiefly notable for the trial of strength that took place between the Radical and Moderate sections of the party in regard to the education policy. A resolution was submitted declaring that one of the first duties of a Liberal Administration ought to be the passing of a Scottish Education Bill which, while preserving the essential features of the School Board system, would co-ordinate primary and secondary education in extended School Board areas. This resolution was supported by the Liberal League section of the party, but strongly opposed by the Radical section led by Mr. Caldwell, M.P. The latter, in supporting the parish as the unit of area, made a bitter attack on what he called "the superior set of Scottish members known as the Liberal League," and roundly accused them of disloyalty to Sir H. Campbell-Bannerman, the leader of the party, who by speech and vote had shown his preference for the parish. In the end a colourless resolution was passed stating that the educational area should only be extended "where necessary." A further and from the political standpoint more serious divergence of view took place in regard to rate aid for voluntary schools. Against the wishes of a small but influential section of the party it was resolved that no rate aid or special grants should be given to schools not under public control. This declaration of policy seems more courageous than discreet, as it is almost certain to lead to the voluntary school influence being cast against the party at the approaching general election. The general result of the meeting is greatly to darken the outlook for educational reform, and to awaken the fear that sectarian passions are to gather round it as in England.

FOR some years past the School Boards have been growing restive under the continued changes of policy of the Education Department, which have resulted in considerably increasing the financial burdens of the local education authorities without any corresponding increase in the subventions from the State. In Glasgow, where the school rate has doubled within the past ten years, the subject was discussed with great thoroughness, and it was shown that the State contributions had practically remained

stationary during the same period, and the percentage of contribution had decreased from 73 per cent. to 61 per cent. It was generally admitted that the changes had been for the benefit of the pupils, but it was contended that where the cost of education was increased by Departmental insistence, the Exchequer should not escape paying its fair share of such increase. It was finally agreed to approach other School Boards with a view to make a joint representation to the Department on the subject. Meanwhile, teachers are looking on at this quarrel with an amused expectancy, hoping that in the falling out of friends, they, honest men, may come by their own.

IRISH.

THE Catholic Scholarship Committee has made its first awards. It will be remembered that the fund was started early in the year as a Catholic reply to Sir John Nutting's offer of exhibitions tenable at Trinity College, to be awarded as the result of the Senior Grade Examinations of the Intermediate Board. Twelve scholarships have been given which will be tenable for boys at University College, Dublin, and for girls at the Dominican College, or at Loreto College in Dublin, and the holders must proceed with the course of the Royal University. The Committee at first proposed to assign three scholarships—two first-class of £50 and one second-class of £25 a year for three years—to each of the four Intermediate courses, viz., classics, mathematics, modern languages, and experimental science; but it was decided this year to award none in mathematics, the two first-class scholarships being transferred to modern languages and the second-class scholarship to science. A curious commentary on this group system is that in many, perhaps a majority of instances, the scholars hold exhibitions from the Intermediate Board for a course different from that for which their scholarships are awarded. Seven scholarships have gone to girls and five to boys. In addition, Archbishop Walsh has given two scholarships to boys educated in the Christian Brothers' schools in the diocese of Dublin—one in the modern literature course, with especial reference to Irish, and one in the course of experimental science. Both scholarships have been won by the N. Richmond Street schools.

THE dissatisfaction with the recent Intermediate awards shows no signs of diminishing. On the contrary, the flame has been fanned by two public addresses delivered by Archbishop Walsh—himself one of the Intermediate Commissioners—denouncing, tooth and nail, their injustice. Quoting chapter and verse for his criticisms, he commented especially on the higher standard exacted this year for girls than for boys, and on the extraordinarily low proportion of Middle Grade exhibitions as compared with the number awarded in the Senior Grade. In his opinion, the Intermediate Board has broken a contract entered into under Rule 41, that the number of exhibitions in each grade and course was to be regulated by the number and excellence of the passes with honours in each grade and course. But where was his Grace when the awards were being made?

MEANWHILE, the Intermediate Board has published a revised exhibition and prize list which hardly improves matters. In the first place, it shows a large number of inaccuracies in the former list. This tends to create scepticism as to the business capacity of the Board in routine work. Secondly, fifteen new exhibitions—ten for boys and five for girls—have been awarded to students in a course different from that in which they entered. This is, it is true, an admission of the reality of the grievance mentioned in these columns last month as specially taken up by the Schoolmasters' Association, but it is also a virtual confession

of the breakdown of the group system which was the basis of the reforms or changes of the last few years. Will the Board now persist in the rules laid down for next year, which will prevent effectually the relief of a similar grievance, or amend its ways by a complete modification? To crown all, the Board at first tried to keep the revised list as secret as possible, and only consented to its publication and sale after protests in the Press.

PROF. M. E. SADLER paid his first visit to Ireland to deliver an address at the prize-giving of the Rathmines School of Commerce on the "National Need of Higher Commercial Education." Commercial education, he said, is a new educational movement arising from three things: more skilfully organised economic activities, the wider range of facts and more complicated commercial situations that face business men to-day, and the application of science and improved methods to economic problems. The object of this higher commercial education is to broaden the mental outlook, to train the mind to analyse the new economic and commercial situation, and to impart the organised and systematised knowledge of commercial principles and procedure which is part of the necessary equipment of the successful man of business. The most striking feature in modern development is national organisation for international relationships, and the root idea of this is the training of each individual (1) for the duties of citizenship, and (2) for discharging with expert skill the duties of his chosen calling. Hence a double need—improved general education and improved technical, which includes commercial education. Since at bottom the business relations of the world are human relations, it is necessary in the training of the commercial leaders of the future to give a large place to the cultivation of the sympathies and the imagination, and to the teaching of the humanities. Higher commercial knowledge is not narrowed down to what Bacon condemned as "The sabbathless pursuit of a man's own fortune." Its true dignity lies in its being inspired by great public aims, and for this end real efficiency depends upon three things—ordered knowledge, scientific method, and strength of character. Prof. Sadler added an eloquent eulogium of German methods and German success in education.

DR. WINDLE, the recently appointed President of the Queen's College, Cork, in his inaugural address at the opening of the session, delivered a severe attack on the present system of examinations in Ireland and England. He said that the belief in the efficacy of examinations seemed to rest on four deadly errors: (1) That acquisition of knowledge and education are synonymous terms; (2) that education as apart from mere knowledge can be easily, nay more, only tested by examination; (3) that a degree or other stamp of learning is, in itself, an object of value; and (4) that it means the same wherever and however it may have been acquired. He pleaded for a combination of a teacher and external examiner to work together. This, which ought to be regarded as a fundamental principle, was violated by the present system of the Royal University, but it could be brought into operation if the reforms proposed by the Royal Commission on University Education were carried into effect.

WELSH.

THERE has been a plebiscite of parents at Cardiff to determine whether Welsh should be taught in the primary schools in that city. The result showed 8,000 votes for and 10,000 votes against the introduction of the subject. Optional teaching of the subject in the schools has not been satisfactory, and the Council was asked to make the subject compulsory for Standard I. in

all primary schools for one year. An amendment, however, was carried to the effect that the views of His Majesty's Inspectors and the head teachers be obtained before proceeding further. Views were expressed at the Council meeting that it would be a disgrace not to teach the subject in the schools. On the other hand, it was pointed out that it was hardly reasonable to compel the Scottish, Irish, and English children to study the language. It was suggested by one speaker that the Government grant for teaching Irish had been withdrawn from the Irish schools for the teaching of Irish, and were Irish children in Cardiff not only not to be taught Irish, but also to be compelled to learn Welsh?

AT least five Revolt Schools are in operation, the fifth being at Ynys Tomas, in Merioneth. This new school is opposite the national school, which had formerly thirty-nine pupils. Of these twenty-eight were transferred to the Revolt School at its opening.

AT the annual meeting of the Court of Governors of the University College of Wales, Mr. David Davies, Llandinam, advocated that the University of Wales should confer initial degrees on graduates of other universities after a course of two (instead of three) years' study in one of the constituent colleges. He also thought that research work should be differentiated in the three Welsh university colleges, so that advanced work could be encouraged specially in each college according to its special facilities. The Principal advocated an appeal for an increased Treasury grant.

AT the opening of a new Council School at Ganllwyd, near Dolgelly, grateful reference was made to the action of Mr. C. R. Williams, who had transferred the control of a voluntary school which he had established, and to which he had been the chief supporter, to the Education Committee, on the passing of the Act of 1902, and then when the building of a new school became necessary, made a free gift of a site. Mr. Osmond Williams, M.P., urged that such schools should be opened every morning with a portion of a chapter of the gospels or epistles, read slowly and reverently, and with a hymn, and ended with the Lord's Prayer, all kneeling. This would meet the assertion that there is no recognition of religion in the schools.

THOSE of His Majesty's Inspectors of Schools, who were on the Court of the University of Wales, on the Central Welsh Board, and on the councils of the University Colleges in Wales, have all sent in their resignations. In reply to a communication from the Court of the University, the Marquis of Londonderry has given the reason for their withdrawal as being that the inspectors "may avoid the possibility of being involved in discussions which might be in conflict with the discharge of their proper duties as inspectors."

THE late Mr. Eyton Williams, of Chester, has left by will the sum of £10,000 to the University of Wales, and £10,000 to the University College of North Wales, Bangor, for the foundation of scholarships and prizes, besides £2,000 to the building fund for the new University College buildings at Bangor. But before these gifts can be received two conditions must be satisfied by candidates for the scholarships or prizes to be established, viz., the belief in the existence of a Supreme Being—God—and in the tenets and principles of the Protestant Church. It has been announced by the Deputy Chancellor of the University that the University is debarred by charter "in the most unmistakable terms from imposing any theological test upon any person whatsoever."

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

H. Blouet, Easy French Rhymes. 95 pp. (Methuen.) 1s.—Mr. Blouet has taken the trouble of translating a number of familiar English nursery rhymes into French, with results which are often comic. *Allez sur un Dada* is "Ride a Cock Horse"; and *Le petit Guillaume Winkie, Tom, Tom le Fils du Pipeau, Petite Mamselle Muffette*, with a number of other famous characters, appear in this strange garb. We remember being amused a few years ago by the appearance of German renderings of these rhymes. Personally we see no good reason why such attempts should be made. Let translators grapple with Heine or Hugo; the nursery rhyme should be sacred.

Anecdotes Faciles et Foisies. Selected by O. B. Super. vii. + 78 pp. (Heath.) 1s.—A convenient selection of eighty-two anecdotes, together with thirteen poems which are so familiar as hardly to be a valuable addition to the book. No notes or vocabulary are given. The text is well printed. We have noticed slips on p. 6, l. 17 (*vous-êtes vous*); No. 26 title (should be *c'est ma coutume*); p. 37, l. 1 (*presque*, not *presqu'*); p. 59, l. 23 (*faits*, not *fait*).

Sure Steps to Intelligent French. By H. R. Beasley. 62 pp. (Sonnenschein.) 1s.—A disappointing book, with a very misleading title. The book deals with the pronunciation, and use is made of phonetic transcript; the spirit pervading the book is excellent, but the execution is faulty, and the author evidently requires to study his subject more deeply before he can be trusted as a guide. He is still too much in the habit of considering the written form of the language; this has led him into the unfortunate pitfall of saying that a letter "has a name, and also a power or voice," and of using two methods of representing the sounds, the phonetic transcript and one based on the ordinary English alphabet. The arrangement is not good, and misprints are far too common. To one who knows something about the subject the book offers nothing new; to the beginner it cannot be recommended, for it is sure to confuse and will probably dismay him.

A First Year of French for very Young Beginners. By G. E. Mansion. vii. + 118 pp. (Harrap.) 1s.—The lessons in this little book are carefully graduated from the point of view of the pronunciation and the grammar. Good exercises are added; on the whole, they are on reform lines, but occasionally there is translation of sentences into French. The lessons are given in phonetic transcript; unfortunately (almost inevitably!) there are misprints in this part of the book. The French-English vocabulary seems complete. Whether the book is really suitable for very young beginners, we doubt: the amount of grammar introduced is very considerable.

Grammaire Française Pratique, basée sur la méthode inductive. Par W. G. Hartog. x. + 247 pp. (Rivingtons.) 3s. 6d.—This is a good piece of work; a French grammar with examples from which the rules are to be gathered, exercises in applied grammar, and not a word of English except the "contd." which has been allowed to remain on pages 62 and 63. Our only regret is that Mr. Hartog did not take a little more time over the book. Often the list of examples is too short to give sufficient data for formulating a rule, and the rules given are often so brief as to be inaccurate. Worse than this is the unusually large number of misprints that disfigure the book. We have noticed far more than we can give here. As extreme instances of haste we may quote page 230, where the same exercise is printed twice

over (first with two misprints, and then with one); and page 37, where the late Queen is said to have died on the 4th of March. Doubtless a revised edition will soon be obtainable.

G. de Nerval, Oriental Scenes. Edited by H. H. Horton. 40 pp. (Blackie.) 4d.—These scenes are extracted from Nerval's admirable *Voyage en Orient*. The introduction deals satisfactorily with the author and his work. The text is not free from misprints: *rais* for *frais* (p. 6, l. 1), *jours* omitted (p. 6, l. 26), *paraît* for *parait* (p. 7, l. 20), *o* for *où* (p. 12, l. 19), *la tableau* (p. 22, l. 28), *tiente* for *teinte* (p. 24, l. 29), *verdur:* for *vendeurs* (p. 24, l. 36), *le* for *la* (p. 29, l. 18), *du* for *de* (p. 29, l. 26), *un* for *une* (p. 30, l. 25), *le* for *la* (p. 32, l. 20). The notes are not distinguished by any particular excellence.

E. S. Buchheim, Der Ungebetene Gast and other Plays. vii. + 91 pp. (Clarendon Press.) 2s. 6d.—Teachers will welcome the six little plays which Miss Buchheim has written, for they are bright and simple. The notes are brief, and consist mainly of renderings of idiomatic phrases.

Classics.

Plato, Crito. Edited by A. F. Watt. 56 pp. University Tutorial Series. (Clive.) 2s. 6d.—Serious students of the *Crito* could not do better than use Dr. Adam's edition; but the present contains softer meat for those who want it. An introduction of fifteen pages can hardly cover subjects as wide as early philosophy, the Sophists, Plato's philosophy, and Socrates' life and work; of these it gives a very brief summary, clear and good, as far as so brief a summary can be. The history of the doctrine of "ideas," however, is inadequate; it does not show how Plato's conception of these developed, and it is important to make clear that the "idea" has different meanings in different dialogues. The notes are very elementary, containing a good deal of translation, and the book is therefore not much fitted for schools; but it will be useful to students who have to work by themselves.

Cicero Pro Lege Manilia. Edited by A. W. Young and A. F. Watt. University Tutorial Series. (Clive.) 89 pp. 2s. 6d.—This book contains the usual biographical and historical sketch, which is satisfactorily done, and an index of proper names. As we have had occasion to say before, there is too much elementary help in the notes (such as the explanation of *is est exorsus*, p. 51; *tradere*, p. 52; *confirmo*, p. 82; and most of the translated phrases). Again, for such readers as read this kind of thing, what is the use of giving the technical term *anaphora* for rhetorical repetition of a word (p. 55)? We fear that examiners are responsible for that useless note. We have no more to say of the work than that it conforms to the type of the whole series.

Livy, Book XXVI. Edited by R. M. Henry. xxviii. + 182 pp. (Arnold.) 2s. 6d.—This book shows evidences of careful study. The life of Livy which is prefixed to the historical sketch, and the account of his style, are accompanied by footnote references for the editor's statements. As regards the style of Livy, we should have been glad to see more examples, and these printed fully in the text, rather than in footnotes. The notes, as usual, contain too much translation for a school book; and we are surprised to find phrases like *ab ira* for the instrumental or causal passed over without a criticism of the syntax. But there is real learning in the notes; see, e.g., that on *primo quoque* (p. 68), which is a good point well made; and those on law (e.g. 71). This edition is better than the usual run of school books.

We may just mention Mr. S. E. Longland's *Easy Latin Unseens*, Book I. (Rivingtons, 39 pp., 6d.), extracts in prose and verse of ten to fifteen lines. There is no interest in such books, but they are often useful.

English.

Essays on Mediaeval Literature. By Prof. W. B. Ker. 261 pp. (Macmillan.) 5s. net.—These essays are distinctly valuable as a contribution to the criticism of literature. Not only has Prof. Ker a wide knowledge and acute critical insight, but he has a literary style of great ease and charm; only in one or two cases do these pages suggest anything like hurried composition, and that, alas! seems to be inseparable from even the most leisured literary work possible in our time. This volume contains seven lectures, and there are several of them which make a direct appeal to the student and to the teacher of English literature at the present time. "The Earlier History of English Prose" is a lucid essay which opens the volume, and it abounds in good things happily expressed. The essay on Boccaccio will claim many readers, and yet for the purposes of English study it is more important to point out the immense value of this author's estimates of Chaucer, Gower, and Froissart. Some of the best things in the volume are said concerning Lord Berners' translation of the last worthy; and if this essay sends readers to those pages it will be of great service. From a purely critical point of view, the essay on Gower would seem to be perhaps the best in the collection. Emphatically an illuminative, suggestive, and in every way a pleasant volume.

Proverbs and their Lessons. By Archbishop Trench. With additional Notes and a Bibliography of Proverbs. By Dr. A. Smythe-Palmer. vii. + 179 pp. (Routledge.) 2s. 6d.—Archbishop Trench's bright book on the significance of the proverbs of various nations has gained in interest by Dr. Palmer's work upon it and should find its circle of readers increased in extent. The foreign proverbs have been translated into English, and in an appendix are given a collection of Latin proverbs of the Middle Ages cast into the form of a rhyming hexameter; proverbs from "The Precepts of Ptah-hotep," which form a part of the oldest book in the world, and date from about 3440 B.C.; proverbs of Alfred, from a thirteenth century MS., and proverbs of Hendyng illustrating the proverbial philosophy of the same century. There is also a bibliography containing a list of the chief works on proverbs in general and classified according to nations. Proverbs represent survivals in literature, and something of the spirit of a nation can be discovered by enquiring into the nature of the proverbial expressions which persist. The same proverbs are often found in various languages, and these illustrate the touch of Nature which makes the whole world kin. The proverb, "One must not look a gift horse in the mouth," might be thought to be typically English in extraction, but it was used in the fourth century by Jerome, who remarked: "*Ohlitus veteris proverbii: mendaces memores esse oportere*," so that the proverb, "Liars should have good memories," was old even in his time. The proverb, "Man's extremity, God's opportunity," quoted by Trench, is probably not so true as "Man's extremity, the Devil's opportunity," in which form the proverb is now usually expressed. The English proverb, "The kiln calls the oven 'Burnt house,'" is compared with the Italian "*La padella dice al pajuolo, Fatti in là, che tu mi tigi*" ("The pan says to the pot 'Keep off or you'll smutch me'"), but a closer resemblance is given by the expression, "The pot should not call the kettle 'black.'" Readers who do not know Trench's little volume could not do better

than obtain the helpful edition which Dr. Palmer's work has rendered available.

Charles Lamb. By Walter Jerrold. 112 pp. (Bell.) 1s. net.—In this little biography of Charles Lamb, Mr. Walter Jerrold has scored a success in every respect. It is most pleasantly written, and shows traces everywhere of an absolute enthusiasm for the gentle Elia, kept in check by a discretion which understands well the art of saying all that is necessary in the best way in the fewest words. Indeed, just as Charles Lamb is deservedly one of the most admired and beloved figures in the portrait gallery of English Men of Letters, so this little volume is one of the very best and most delightful hitherto issued in this charming and attractive series. The volume is delightful when Mr. Jerrold discusses the essays, and may be warmly commended.

Early Poems. xii. + 116 pp. *English Idylls.* xii. + 116 pp. *In Memoriam.* xii. + 111 pp. *Maud.* xi. + 109 pp. *The Princess.* x. + 110 pp. *Idylls of the King*, Vols. I. and II. x. + 95 pp. and 78 pp. respectively. (Heinemann.) 6d. each net.—We commend these charming and elegant pocket volumes to all lovers of the poetry of Lord Tennyson. There are frontispieces to each volume which are marvels in the art of artistic reproduction. Chief among these in interest is the portrait of Tennyson at the age of twenty-nine, a little known one; the later portrait prefixed to "The Princess" being so much more familiar. The Watts portrait, being later still, is also included in this series. In each volume Mr. Arthur Waugh supplies the introductory matter, in a brief compass reproducing the essence of his own Tennysonian studies, already well known as the subject of a separate and critically excellent volume. His remarks are in all cases to the point and clearly expressed.

Talks with Tinies. By Mrs. Sandford. 216 pp. (Pitman.) —Is a collection of very easy object-lessons for very young children. Plenty of illustration accompanies it, and in the hands of a good draughtsman it should be fascinating. The aim, we understand, is to get children thoroughly interested in their own attempts at drawing. Instead of lessons in drawing, these are lessons by drawing. Many persons who do not go the whole way with the author and with the writer of the preface will welcome the idea.

Selected Poems of Matthew Arnold. Parts I. and II. (Heinemann.) 6d. each.—Admirably edited and wonderfully cheap. All the favourites are here, and Mr. Arthur Waugh's preface is very good indeed.

Select Poems of S. T. Coleridge. (Heinemann.)—This and the foregoing volumes can be put into any pocket, and are very well printed. We have no word of criticism but this: in a later edition could the publisher round the edges of the books?

Spenser's Faerie Queene. Book I. By C. L. Thomson. 244 pp. (Horace Marshall.) 1s. 4d.—We have already spoken favourably of the "Carmelite Classics" as fulfilling a definite and original aim in a suitable and capable way. This somewhat larger volume than has been hitherto customary in this series nevertheless does not depart in any particular from the features already well known. It contains notes on such matters only as an ordinary pupil could not be expected to know or think out for himself. It aims at being primarily an edition for pupils. To assist the teacher a list of authorities on Spenser and his works are appended, and also a set of highly ingenious

and interesting examination questions. We commend Miss Thomson's introductory remarks, though we hold she has been unduly brief in her notice of Spenser's versification. This important feature of the "Faerie Queene" may perhaps be either omitted altogether, as in the case of an edition like the present, intended for juveniles, or it should be treated with some fulness.

The Elements of English Grammar. By Alfred S. West. ix. + 331 pp. (Cambridge University Press.) 2s. 6d.—This volume has already been highly commended in our columns, but we notice this new edition with pleasure, because it contains an additional chapter in essay writing, to say nothing of some hundreds of additional questions and examples above those which made so markedly interesting a feature of the previous issue. We have previously expressed the opinion that no instructor in the art of essay writing will ever succeed in making an essayist pure and simple; that is a talent born, and not made. Moreover, it not unusually goes with poetic gifts. But a good deal of sensible training in the art of sound and sober expression is still a desideratum in school work, and what Mr. West has to say upon the things to be avoided (and how to avoid them) in these directions to budding essayists is distinctly good.

Much Ado about Nothing. By R. Williamson. xxx. + 162 pp. *Twelfth Night.* By H. L. Cann. xxiii. + 111 pp. (Longmans.) 1s. each.—These volumes are an instalment of the "Swan" edition of Shakespeare. They are carefully edited, and are supplied with good introductions. The notes are brief, but clear and useful. A great point is the illustrations, which are calculated to awaken much interest in the subject-matter of these plays. In the introduction the subject of Elizabethan language is dealt with clearly and in an interesting way.

A Text-book of Précis Writing. By T. C. Jackson and J. Briggs. vi. + 219 pp. (W. B. Clive.) 2s. 6d.—This is one of the most useful volumes of the well-known University Tutorial Series; and it is useful not because of its merits as a book for cramming purposes, a reproach which may not unjustly be brought against many of its predecessors, but because it deals with a practical subject in a practical way. The arrangement of their material by the authors is the result of their perception that précis writing is a subject of educational value, and is not merely to be considered as an obligatory subject for Civil Service candidates. Hence this book is intended for all professional men, and a specially interesting chapter is devoted to its use in the case of journalists. The explanation of the principles of précis writing with which this volume opens is clear, and the exercises are of great value. The most cordial commendation is owing to this book.

Henry the Fifth. By E. K. Chambers. 141 pp. (Blackie.)—This is an elegant edition of Shakespeare's play, in the series known as the Red Letter Shakespeare. There are no notes, but there is a well-written introduction. The beauty of the type and the style of the book are beyond praise, and the dainty binding will commend it to book-lovers.

School Recitations. By Margaret Riach. Books I., II., III. 32 pp. each. (Blackie.) 1d. each.—We have on a previous occasion spoken with high approbation of Miss Riach's skill and taste in compiling little booklets upon much the same lines as these; in which, indeed, she has done as well as before. Six booklets are projected to complete the series; but from the evidence of these three it is only necessary to commend them

warmly. The first book is for juniors, the others are adapted to senior forms. Many of the poems are copyright, and are reproduced by special permission. Others consist of interesting pieces which have never hitherto appeared in any such collection. For thus straying into unfamiliar paths Miss Riach deserves hearty thanks.

Outline Text Lessons. By Gladys Davidson. 128 pp. (James Clarke.) 1s.—This little book is to be commended. The author has evidently more in store for the world, for this book is described as a first series of lessons, and they are intended primarily for use in junior forms. Miss Davidson herself suggests that with a little elaboration they might be useful as addresses to children in church. We venture to doubt this, unless they should happen to be handled by an expert at the business; for they follow somewhat conventional lines, and anything more uninteresting than the customary address to children, given by people whose intentions are as good as their abilities are deficient, it is impossible to listen to. And children mostly say the same as the present writer; only this intelligence never gets to the ears of those well-meaning incapables who try to talk to them. Those parts of this book which deal with flowers are the best. The rest has all been drummed into children so often that they are mostly weary of it already.

Macbeth. 76 pp. *The Tempest.* 71 pp. *King Henry V.* 91 pp. (Edward Arnold.) 6d. each.—The editing of these plays of Shakespeare has been limited only to the supply of a glossary, which is not a herculean labour. The text is, however, clearly printed. If we suggest that there is not sufficient room in the margins for any notes of importance, the remark is not made in any spirit of captious criticism.

The Council School Hymn Book. vii. + 152 pp. (Novello.)—This is a literary and theological venture of the London County Council, and it is specially adapted to the elementary schools under L.C.C. control. The selection has been well done, and only those hymns are included which express the central truths of religion, and are at the same time within the comprehension and suited to the capacities of children. Some prayers at the end are chosen on the same principle. The collection is a large one, and its literary merit may be emphatically commended.

Pitman's Lessons in English. Book V. 64 pp. (Pitman.) 4d.—This booklet is intended for use in Standard V. of elementary schools, and it maintains the same aim as has characterised the previous books in this series. The idea is to build up in a pupil's mind a knowledge of English by means of exercises graduated with extreme care. These deal with spelling, word-building, and the formation of sentences, and where grammatical technicalities have to be dealt with they are encountered rather in the ordinary course of composition, and difficulties are thus smoothed away, which, when the usual plan is followed of learning dry text-book rules, often remain, and are never really explained at all. This booklet is well deserving of study and wide use.

Pitman's Illustrated Aids to Composition. First Series. 3s.—Is more ambitious. It aims at encouraging the illustrated composition lesson. Thus, the card illustrating "The Skin" has illustrations of pore, epidermis, hair follicles, and fat cells; the card illustrating "Crossing a Desert" has pictures of the mounted Arab and of an oasis. The notion seems to be that the drawing of these and kindred subjects is not to be left to the teacher, but that the child may have his own illustrations before him. We can quite understand children being led on to good work later in composition and in illustration by this method. Is

it not possible for the publishers to curtail the lettering and give more room to the pictures, and to allow teachers to buy in a series thirty or forty copies of the same subject?

New Globe Readers. Book VI. viii. + 280 pp. (Macmillan.) 1s. 8d.—The aim of the compilers of this volume has been well attained. The literary merit of these selections is high, and they are also extremely interesting; and in no case are they above the comprehension of the particular type of mind for which this reader has been prepared. The notes in this case are put at the end of the volume, which we think an admirable idea, and the vocabulary is omitted so as to encourage the use of a dictionary. A reader deserving of high praise.

We have before now praised highly the *A. L. Bright Story Readers.* (E. J. Arnold.) 4d. each.—Now "King Arthur," "Sinbad," "The Cricket on the Hearth," "The Three Giants," and "The Ugly Duckling" are added to this admirable series. No school can plead that it costs too much to form a good library, with these little masterpieces in the market.

The Sunbeam Infant Readers, in four parts. (Oliver and Boyd.) Prices varying from 4d. to 7d.—They are bright, well printed, and full of cheerful colour. Comedy, too, is not unrepresented in the pictures.

Geography.

Object Lessons for Juniors. By F. H. Shoosmith. 114 pp., with Blackboard illustrations. (Charles and Dible.) 2s. 6d.—This little book by the Editor of the *Teachers' Times* is throughout addressed to the teacher. "Who has ever seen a picture of a waterfall? (show pictures or photographs of any famous waterfalls.) . . . "Such fertile spots are called oases (show picture if possible)" . . . are examples of what the teacher addressed may expect. The subject-matter is contained in thirty-seven "Lessons," of which Nos. 1-6 deal with directions, e.g., Pole star and compass; Nos. 7-10 with elementary plan and map-making; the rest with the ordinary facts of physiography and physical geography. Numerous exercises are given and many more are suggested, which, we think, is a most excellent feature of the book. We can recommend it to teachers taking young forms, but they must be on their guard against some of the antiquated spelling, e.g., "Hindoos" and "Thibet," and dogmatic derivations, e.g., Red Sea (from the red coral), and Baltic (from the "Belts"), with which the work abounds. We think it is to be regretted that Mr. Shoosmith has neither dated nor indexed his book.

Laboratory and Field Exercises in Physical Geography. By Gilbert H. Trafton. 90 pp., with a few maps. (Ginn.) 2s.—Geography masters who wish to see how physical geography may be taught by means of exercises—much after the fashion of arithmetic or French—should get this book as a model. It is full of suggestions and all of a valuable type. The author, who is the instructor in science in the High School, Passaic, N.J., writing May, 1905, considers that schools now are only at the beginning of what will in the course of time be the ordinary method of teaching physical geography. We are inclined to agree with him. Certainly many authorities—notably our own Board of Education—are insisting on the futility of teaching geography without exercise work. Mr. Trafton, at all events, believes in plenty of it. The unfortunate thing is that—naturally, of course—all his exercises are American, and largely local American at that. They are accordingly here and there quite inappropriate for schools of the United Kingdom. The ingenious teacher, however, will have little difficulty in transforming them into such exercises as he wants, and will therein be doing good work.

History.

Viaduct Series of Historical Cartoons.—This is a new series brought out by the Educational Supply Association. The pictures are intended to represent important epochs in English history. The first of the series, "The Introduction of Christianity," depicts the story told by the old chroniclers of the meeting between Ethelbert and St. Augustine, when the king, persuaded by his Queen Bertha, already a lover of the Christian faith, consents to give the monk a hearing. The throne and pulpit are improvised in the open air, that any spells the priest may exercise shall have no power. The king is attended by members of his court, the abbot by his band of monks bearing crucifix and banner. The picture claims to be historically correct in every detail, but this can hardly be substantiated. The old story states that the meeting was in the open plain; the picture suggests walls, possibly the walls of Canterbury, in close proximity. Little is known of early vestments or banners, nothing until about 1000 A.D.; therefore the abbot's garb and the crucifix and banner are doubtful points. For the rest, the picture makes an attractive whole. It is printed in warm, brown tones, with the clear outline of a strong chalk drawing. The size, 27 in. by 35 in., is convenient for class use, and the price is low. It can be had framed in oak for eight shillings, or, with the remaining five of the series, in one frame with hinged back, for twenty-four shillings.

Illustrative History. Stuart Period. Edited by J. W. B. Adams. xxiv. + 285 pp. (Horace Marshall.) 2s. 6d.—This is a book of "sources," such as we are glad to see multiplied nowadays. But the selections made use of are of two kinds. Some are strictly from contemporaries, and these we regard as the true contents of such books. Some are from later authorities of various kinds, ranging from Ranke and Macaulay to Walter Scott. If these are to be included, care should be taken by the teacher to point out the different merits of the two kinds of "authorities." The selection is well made, and will certainly answer the object of the editor, to add to the dry details of the ordinary text-book and to help interest our pupils in English history. Besides the extracts, there are an introduction, giving a brief account of the "sources," several good pictures, and a glossary, which we think might be somewhat improved.

The Soldier's Historical Geography of the British Empire. By J. C. Ellis. 96 pp. (Blackie.) 8d.—There is much more geography than history in this little manual. But, without knowing the requirements of the "soldier," we should imagine it is well adapted to its purpose. It is clearly printed, concisely written, and it is provided with abundance of questions, most of them of an elementary character. Its strength is more topographical than political, but there is probably enough of the latter for its readers, and it is correct all through.

Horatio, Viscount Nelson. 72 pp. (Jarrold.) 4d.—A "supplementary reader" suitable for this year, telling in simple language the story of Nelson's career. It is illustrated with good woodcuts, with verses of various kinds, and is provided with notes and questions.

A First History of English Literature. By D. Campbell. pp. 1-122. (Oliver and Boyd.) For its purpose—that is, of introducing middle forms to the facts of English literature—this book is well adapted. It is more interesting than the ordinary primer, and it contains a good deal which we do not find in more cut-and-dried volumes. Supplemented by the texts themselves, it cannot fail to be of great use.

Mathematics.*Higher Mathematics for Students of Chemistry and Physics.*

By J. W. Mellor. Second edition enlarged. xxi. + 631 pp. (Longmans.) 15s. net.—It is a real pleasure to notice that this work has gone into a second edition, because of the evidence which is thus furnished that students of chemistry are beginning to understand the value even in chemical research of a knowledge of higher mathematics. If estimated by the standards often contemptuously described as “academic,” the book is certainly open to criticism, though we are glad to observe that the author (see the very interesting Introduction) lays stress on logical reasoning, and we cherish the hope that in future editions formal logic will have freer play. At the same time there is a wealth of illustration that will, if properly studied, be much more convincing to the reader who is fairly familiar with chemical and physical work than demonstrations that are in themselves possessed of logical cogency, but are divorced from concrete examples. The range of mathematics discussed in the volume is very wide, too wide, we think, for a book that starts from such modest beginnings as a knowledge of algebra sufficient for the solution of a set of simple simultaneous equations and acquaintance with the meaning of a few trigonometrical formulae; unless the reader possesses in addition to such knowledge the power of reasoning that ought to come from more extended mathematical study, or from a careful training in experimental work, he will, we fear, find considerable difficulty in really assimilating the conclusions of the text. To illustrate what we mean we may take Chapter V. on “Infinite Series and their Uses.” The chapter is exceedingly interesting, and contains many applications that are of great practical importance; yet the treatment of several sections, in particular Sections 101-108, makes very large demands on the capacity of the reader. While we think that the book might be greatly improved in regard to the purely mathematical treatment without seriously increasing the difficulty of the reader who may be averse to pure mathematics, we gladly welcome the rich and varied illustrations it contains, and heartily recommend it to students of chemistry and physics who find the “regular text-books” too repellent. It may be added that the volume contains some useful tables.

Integral Calculus for Beginners. By Alfred Lodge. xiii. + 203 pp. (Bell.) 4s. 6d.—This work is a sequel to the “Differential Calculus” by the same author, and possesses the same merits—orderly arrangement, simplicity of statement, and variety of examples. We do not agree with the author in the use he makes of infinitesimals, and we find it hard to attach a definite meaning to the “ideally accurate” expression referred to near the top of page 6; but the general plan of the book is excellent, and the discussion of the various methods of integration is admirably simple. One of the most interesting chapters is that on approximate methods; the applications to centres of gravity, centres of pressure, and moments of inertia, in Chapters VIII. and IX., should be very useful to students of mechanics. The discussion of the gamma function in Chapter X. seems to us not quite suitable for an elementary book like this. Two chapters on differential equations wind up a book which is very attractively written, and contains many applications of a most useful kind.

An Intermediate Course of Mechanics. By Alfred W. Porter. viii. + 422 pp. (Murray.) 5s.—This book, as stated in the preface, has been written as an accompaniment to a first year’s course of college lectures, and, though not written from the point of view of examinations, includes those portions of mechanics required for the Intermediate Pass Examination of the University of London. The treatment is throughout very

clear, and the illustrations are well adapted to their object. The second chapter contains one of the best discussions of the notions of velocity and acceleration that we have met with in an elementary book, and there is throughout a noticeable care in accuracy of definition. It might have been possible to work out a larger number of examples, but no student can carefully work through the book without obtaining a sound knowledge of elementary mechanics, so far as that is obtainable by studying a text-book.

Experimental and Theoretical Course of Geometry. By A. T. Warren. Third edition, with additions. viii. + 298 pp. (Clarendon Press.) 2s.—This book, which has now reached its third edition, has commended itself to many teachers as one of the best that has been issued since the long reign of Euclid came to a close. The new edition seems to differ from the second only in the series of examination papers in geometry on the new lines set by various examining bodies, which occupy pp. 260-294; these should be very valuable to teachers. Some of the papers are exceedingly good.

Elementary Treatise on Pure Geometry. With numerous examples. By John Wellesley Russell. New and revised edition. xii. + 366 pp. (Clarendon Press.) 9s. net.—We remember the great pleasure we had in reading this book when it first appeared, and are glad to welcome this new edition. The numerous discussions in recent years on the best way of presenting geometry to beginners have had little reference to the higher geometry, unless possibly to suggest that it should be left alone. It is to be hoped, however, that there will now be more time for the study of works like that under notice; it would indeed be a lamentable result of recent changes if interest in pure geometry were to grow faint. We should gladly see the study of geometrical conics largely replaced by the study of higher geometry, and we have to our hand an excellent guide in this treatise. The changes that have been introduced in the new edition are evidently the result of experience in the use of the book, and seem to be all in the right direction.

Tables and Constants to Four Figures. Compiled by William Hall. ix. + 60 pp. (Cambridge University Press.) 3s. net.—To complete the title we should add, “for use in technical, physical, and nautical computation, and adapted to the requirements of junior mathematical students.” The needs of nautical computation have demanded the insertion of a number of tables which will not be greatly used in ordinary school work, such as the Traverse Table (pp. 2-19), the Tables of Haversines (pp. 30-37), and the tables on pp. 54, 55. For the ordinary calculations of the school or laboratory the remaining tables contain all that is needed, though a short table of cubes and cube-roots would be useful for graphical work; for the wider circle whom the compiler has in view the complete collection deserves almost unqualified praise. The only objection, and it is not of great weight, is that in the trigonometrical tables the differences are only given for three minutes instead of five, as in the usual tables. The accuracy of the tables cannot be sufficiently tested by mere inspection; so far, however, as isolated tests go, we have found no mistakes. Two errors which occur in most four-figure tables are not found in this set.

The Primary Arithmetic. Part II. Edited by William Briggs. 96 pp. (University Tutorial Press.) 6d.—Part I. was noticed on p. 398 of THE SCHOOL WORLD, and this part is constructed on the same lines as Part I.; it includes the compound rules, weights and measures, factors and multiples, vulgar fractions, practice and invoices. The book contains answers to the questions.

Blackie's Model Arithmetics. Three Term Scheme "B." In script figuring. Book I., 40 pp., paper covers, 1½d.; Book III., 48 pp., paper covers, 2d.—We do not know that these little books are very decidedly better than their competitors, but we think they are quite good and satisfactory; they are well printed, and the script figuring is remarkably plain.

Science and Technology.

The Laws of Health. By David Nabarro. vii. + 184 pp. (Edward Arnold.) 1s. 6d.—This book is intended primarily for the older pupils in elementary schools, but will probably be found no less useful in secondary schools. On the whole, it is well and clearly written, with a rather smaller proportion of the technicalities of physiology, and a considerably larger proportion of practical health maxims, than are usually found in books of this character. Each chapter is summarised at the end of the book, and the most important precepts are emphasised by the use of thick type. These are commendable features, but in other respects the book does not differ greatly from other recently published readers on hygiene and temperance. Perhaps the weakest chapter is that on Food, where we find the usual misleading distinctions drawn between nitrogenous and non-nitrogenous food-stuffs. But, after all, the question whether a carbohydrate is merely fuel, or something else as well, makes little difference to our enjoyment of a well-cooked potato.

Oblique and Isometric Projection. By John Watson. iv. + 59 pp. (Edward Arnold.) 3s. 6d.—In spite of the manifest advantages of supplementing ordinary orthographic projection by more pictorial methods, there is still among many teachers a want of clear understanding of the principles on which such methods are based. Mr. Watson's book therefore fills a real gap in the literature of practical geometry. The book is strictly elementary in treatment, and is confined to an explanation of oblique and isometric projection, and the essential differences between the two. The illustrative examples are sufficiently varied in character to enable the reader who works through them to gain a sound knowledge of the subject. The book may be confidently recommended.

Organic Evolution. By C. W. Saleeby. 125 pp. (Jack.) 1s.—Dr. Saleeby explicitly states that his volume deals with organic evolution "not for itself alone," but "as an indispensable study in preparation for that of mind, society and morality." Accordingly a very large proportion of the book is allotted to the evolution of man, the lower organisms being referred to only incidentally. The author has done his work well, and has succeeded not only in producing an absorbingly interesting essay, but in pointing out the fallacies of the misconceptions which are still popularly associated with the term evolution. To the general reader, who wishes to understand the bearing of evolutionary ideas on pressing sociological questions, the book may be warmly recommended.

Heredity. By C. W. Saleeby. 118 pp. (Jack.) 1s.—Any one who, not having received a training in biology, yet wishes to gain a clear notion of present-day views on heredity and variation, can scarcely do better than peruse this little volume carefully. It is not light reading—a subject necessarily so bound up with one of the most specialised departments of science hardly lends itself to exposition in the language of journalism—but it is nevertheless a very lucid and trustworthy analysis of the essentials of the various theories in vogue, and it is written in the light of the most recent investigations.

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.

Ordnance Maps in Schools.

MANY readers are probably aware of the existence of a special cheap edition of Ordnance maps issued by the Board of Agriculture in response to a memorial sent by the Geographical Association. A few notes by one who has used them fairly extensively in school work may prove of value to those who are interested in the teaching of geography. Application having been made to the Director-General of the Ordnance Survey Department, Southampton, a printed form is sent, which is filled in and sent back with the necessary cash. These maps are reprinted on "cheap but reasonably strong paper" at the rate of £4 10s. per thousand, and two hundred copies is, I believe, the minimum number supplied. The ordinary price of an Ordnance sheet is one shilling.

At the Manchester Municipal Secondary School we have a stock of one thousand one-inch sheets and a similar number of six-inch quarter sheets, of which about six hundred of the former and three hundred of the latter have been issued to the scholars. No charge may be made to the children for the maps. "They must on no account be sold or given away." After issuing them to the class and putting the name of each scholar in the place provided for the purpose, some work of real educational value can be done at once—the explanation of the symbols and the finding of churches, post-offices and other landmarks by the children. The variety of class-room exercises which can be devised by a skilful teacher is almost endless. The wonderful network of tramways in Manchester, after preliminary instruction, is put in by filling in the roads along which they pass with red ink. It is pretty work, and a great deal can be learned in this way of the topography of districts out of the immediate ken of the individual scholar. It is really amazing how ignorant the average schoolboy is of his own district. The vast majority of ours never cross the Irwell. Salford is to them only a name, connected with docks and dinginess. Heaton Moor, in South Manchester, is unknown to thousands—not of children only—who live near Heaton Park, in North Manchester.

Another useful exercise is the colouring of all streams, reservoirs and the like with blue paint. Yet another, and perhaps the most important and educational, is the drawing of sections, after a careful explanation of the principle of contours. A few sheets of Bartholomew's fine "half-inch to the mile" map of Britain, on which the contours are coloured, should be used to show the heights of land graphically. The boys' Ordnance sheets should have hill-shading (which costs nothing extra) and the contours in red (5s. extra per 1,000). The class can read contours, after the preliminary work mentioned, without the aid of colouring. Sections are best done on squared paper ruled in $\frac{1}{10}$ inch squares. The first should be in a straight line from one place on the map to another, and to the same horizontal scale as the map, *i.e.*, 1 : 63,360—vertical scale, $\frac{1}{10}$ inch to 100 feet—*i.e.*, 1 : 12,000. After these simplest exercises, sections can be constructed along roads, and the scales can be varied.

The one-inch map is useful for out-door work, the six-inch map vastly more so. It is needless to say that from the very start the lads will have located very many known landmarks on their Ordnance sheets. But the converse is less easy, *viz.*,

the finding out of actual spots referred to on the map. Stand in a valley with a small circular area of 300 feet altitude marked on the six-inch sheet. Point it out on the map to the class, and tell them to "get there." When you finally ascend to the spot yourself the lads will crowd up there from all points of the compass, where they have been wandering. Out-door work in towns is often said to be impossible, but it certainly can be easily done with a little co-operation on the part of other masters. A class which has its geography lesson last in an afternoon, for instance, can easily be taken off to some spot favourable for map-reading. The boys are never unwilling to stay past the time for ordinary school hours, and an hour or two spent in their company, away from the four walls of a school and out in the open air, well repay any teacher for a little extra trouble, both by their educational value and by the fact that the master can, if he will, get much closer to his pupils and know them better as individuals than he can possibly do in school.

It is, lastly, perhaps hardly necessary to point out that this Ordnance-map work is a fine example of teaching on the principle, "from the known to the unknown." The young geographer should know his own district first and best, just as the grown-up lad, who is mad to go abroad because it is fashionable, should make some attempt to exhaust the matchless beauties of our picturesque country first. How often does one find that students know the mountain systems of North America or Asia far better than those of our own islands. Popocatepetl, or Ruwenzori, or Demavend, are far more familiar to them than Kinder Scout, or Brown Willy, or Rivington Pike. It seems to us only common-sense to say that the scholar should know his home region in more detail than any other, and we venture to say that no better means can be found than the use of the sheets which a beneficent Department has so generously placed at the disposal of teachers.

E. W. DANN.

Manchester.

Teachers for South Africa.

IN consequence of my having visited South Africa of late, and of having seen something of the state of affairs, I have been asked by a leading member of the South African Colonisation Society to do what I can to make known the educational wants of these Colonies and the efforts the Society is making to cope with them.

Their Education Committee acts as an intermediary between:—

- (i) Teachers in Great Britain desiring posts in South Africa; and
- (ii) Government departments for education, or private employers, in South Africa.

The Committee invites communication and co-operation from:—

- (a) Principals of training colleges or other educational bodies, and qualified teachers of all sorts, in Great Britain.
- (b) Officials and private persons in South Africa, who require the services of first-rate teachers.

There is a growing demand for qualified men and women teachers, both elementary and secondary, as well as for trained musicians, private governesses and technical teachers. Also, typists and shorthand writers are sent out through this Committee and should apply in the same way.

The following educational authorities have expressed their approval of these objects, and have consented to give the bene-

fit of their advice on points of special difficulty: Sir W. R. Anson, Sir R. C. Jebb, Sir H. Craik, and Mr. H. T. Gerrans.

Over so wide a field—comprising the greatest part of the continent south of the Equator—it would be misleading to generalise as to conditions of service and emolument, but full particulars can be obtained from the Education Secretary, South African Colonisation Society, 47, Victoria Street, London, S.W.; whilst applications respecting Scottish teachers should be addressed to the Scottish Representative on the Education Committee, S.A.C.S., 42, Frederick Street, Edinburgh.

As to the need for experienced teachers and the importance of the work—both from an educational and an Imperial point of view—no doubt can exist in the mind even of the most cursory visitor.

Naturally the conditions of climate and of life in South Africa vary enormously. This is evident as one glances at the map and sees the names: Cape Colony, Natal, the Transvaal, Orange River Colony, Rhodesia, and the South African Protectorates. Herein a location can be offered which would suit every taste!

As to the strenuousness of the people and their hospitable instincts, surely every member of our late expedition can do no other than speak well of these.

J. O. BEVAN.

Chillenden Rectory, Dover.

French Plays in Schools.

I WOULD like to join in E. M. G.'s enquiry for short French plays, and particularly for high-class comedies for girls of between 12 and 15 years of age.

For elementary classes the only ones I know of, and have used, are "Petites Comédies" in Blackie's series of Reform Readers, but these have been objected to by some, on the ground of unsuitability of subject-matter.

As I am fully convinced that the use of French plays is conducive to fluency and correct expression, and that comedy is useful in making the children acquainted with the delights of French wit and with the facts of daily life, I am very anxious to know of plays of proved suitability for class use.

FLORENCE THORPE.

Norwich.

The School World.

A Monthly Magazine of Educational Work and Progress.

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All contributions must be accompanied by the name and address of the author, though not necessarily for publication.

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